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FIBROSITIS: TREATMENT BY PHYSICAL MEANS.[1]

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OF recent years much importance has been attached to fibrositis, and lately there have been some interesting articles on this subject.[1][2][3][4][5][6][7] The condition has been recognized for about one hundred years. The Swedish and German schools were the chief contributors to our knowledge of fibrositis. The term is given to a symptom complex which covers a large number of clinical entities. Some of them are frequently acute; some are more chronic, usually rheumatic in nature, but dependent on different ætiological factors.

[1] Read at a meeting of the Victorian Branch of the British Medical Association on July 1, 1936.

Fibrous tissue occurs, widely spread in the body, as a binding agent for muscular, nervous and body tissues. Fibrositis means inflammation of this tissue and is defined as an inflammatory hyperplasia of the white fibrous tissue, such as occurs in chronic rheumatism. According to the site of this inflammation, the term "fibrositis", as named by Sir William Gowers, may refer to many conditions appearing in various parts of the body. These conditions have different names, similar in origin but, in the minds of many, of very different meaning. For example, we have such terms as brachial neuritis, stiff neck, neuralgia, neuritis, interstitial neuritis, chronic rheumatism, muscular rheumatism, myositis, myalgia, growing pains, sciatica, sciatic neuritis, gluteal fibrositis, lumbago, tennis elbow. Probably many other conditions are of similar origin, such as intercostal neuralgia, cardialgia, pleurodynia, rheumatic headache, coccydynia and panniculitis. Gordon defines fibrositis as an inflammatory

reaction of the fibrous supporting tissues of the body to extraneous poisons, which may be bacterial or toxic. It affects particularly the soft tissues, muscles, fascial coverings, aponeuroses, origins and insertions of muscles, intermuscular septæ, fibrous capsules of joints, bursæ, ligaments and nerve sheaths. In all these sites the essential pathological process is thought to be of the same nature. The affected tissues are swollen, indurated or nodular, and very tender. The affected or overlying muscles are usually spastic. In more chronic cases there may be wasting from pain, stiffness and disuse.

Maxwell Telling[5] describes chronic muscular rheumatism, or muscular and tendinous rheumatism, myalgia, muscular fibrositis *et cetera*, as inflammatory exudation into the fibrous tissues in almost any situation in which fibrous tissue is found.

The social and economic importance of fibrositis is considerable, since, like arthritis, it leads to a great amount of more or less temporary invalidity. In some cases years of pain and suffering may be experienced, during which time the patient may be wholly or partially incapable of work. Departments of physical therapy are filled with such patients showing the various manifestations of fibrositis.

Ætiology.

In considering the ætiology of fibrositis, I find great difficulty in classifying the various factors, some of which are predisposing and some exciting.

Predisposing Factors.

Of the predisposing factors I would mention the following:

Seasonal Influence.—It is well known that cold, damp and chill are important factors to be considered. Your patient's condition is often a more exact forecast of changes of weather than meteorological data; in fact the patient becomes a veritable barometer. Pemberton[8] has done some very valuable work on the blood vessels in arthritis; and, as most arthritics are sufferers from fibrositis, the same observations hold good for fibrositis. He has demonstrated a narrowing and irregularity of the capillary vessels, a slowing down of the blood flow, and has shown that the vessels of the capillary bed are less responsive to changes of temperature. It is this lack of response, with poor interchange between the tissues and fluids of the body, that predisposes to an attack of fibrositis. A well-recognized type of patient is one, often over-weight, with inadequacy of endocrine and sympathetic control, shown by inactive skin and intolerance to cold.

Body Types and Postural Influences.—Many patients are predisposed to fibrositis because they are under continual abnormal strain.

Age.—Acute types of fibrositis are more common in adult life. The young are not usually affected; the more chronic types are seen in older people.

Metabolic or Constitutional Factors.—Metabolic or constitutional factors predisposing to fibrositis may be biochemical, due to chemical auto-intoxication resulting from dietetic over-indulgence, delayed digestion, faulty elimination by the bowels, kidneys or skin. In many cases there is an underlying constitutional factor. Leonard Williams[9] states that the essential condition precedent is the existence of a toxin in the blood and that that toxin in the large majority of cases, if not in all, is of gastro-intestinal origin. Under this heading I would group, perhaps, the endocrine factor, causing over-weight and poor vasomotor control. Another general metabolic disturbance, namely, gout, is of very great importance.

Preexistent Arthritis.—Preexistent arthritis of joints or lumbar vertebræ, or abnormalities of the fifth lumbar vertebra may be predisposing factors.

Ill-Health.—Ill-health following severe illnesses, such as influenza and nasal sinusitis, operations, or nervous fatigue from mental and nervous strain, also have some influence.

Toxic or Septic Influences.—In my experience toxic influences are of importance. Foci of infection are frequently observed, and it is remarkable how often dental infection is present in these cases. I have known patients, who have been treated without success by the unqualified, quickly respond to the removal of a focus of infection. For this reason it is essential that physical therapy should be used only by those experienced in general medicine or by those in close cooperation with the medical profession. The most diligent search for foci of infection must be made. Foci not often recognized are: the innocent tonsil, roots or stumps of teeth, the cervix and the prostate.

By innocent tonsils I mean tonsils which are small and appear healthy. Pus may or may not be expressed, but occasionally one sees small white areas covered with mucous membrane, which are really pockets full of pus without an outlet. These I regard as being very suspicious evidence of absorption from the tonsils. A diagnostic test was brought forward a few years ago for the presence or absence of tonsillar absorption. The tonsil was sparked in two or three places with a diathermy needle. This caused an inflammatory reaction with exacerbation of symptoms. I have seen it successful in some cases.

Roots or stumps in edentulous patients may be foci of infection. A patient of mine, aged seventy years, under treatment for rheumatism, had had her teeth removed forty years before. While she was under treatment my attention was directed to a sore under her dental plate. There was more swelling present than is usually seen with small ulcers under the plate, and an X ray picture revealed a retained root. Its removal improved her condition very quickly.

Cervicitis is so common that I must particularly draw your attention to it. The cervix is usually hypertrophic, lacerated and eroded. I have had many cases of persistent lumbago and sciatica in which the condition has been relieved by the cure

of the local condition. This is usually done by zinc or copper ionization or by diathermy.

Prostatic infection in the male is one of the most common sources of general ill-health and fibrositis. It is not infrequently present without a previous gonococcal infection. Pemberton believes that it may be secondary to dental and tonsillar infections.

Previous Attacks of Fibrositis.—Previous attacks of fibrositis predispose to further attacks.

Exciting Factors.

Of the exciting factors, I would regard sudden changes of weather and exposure to chill as of great importance. Another factor is strain and injury. Those whose occupation leads them to great muscular exertion, with perhaps exposure, are very prone to attacks of fibrositis, which may be precipitated by merely lacing up the boots or getting out of a bath. These are not really great muscular strains and seldom produce an attack unless some predisposing constitutional condition is present.

The osteopaths introduce yet another factor and call it the "osteopathic lesion".[10] They suppose that a strain of a joint occurs with or without some displacement. The strained capsules or ligaments are then the seat of fibrositis, which may possibly go on to the formation of adhesions. It is thought that this area of fibrositis so acts on the vessels and nerves that important somatic or referred visceral effects are produced. I am quite sure of the referred effects, for one frequently finds pain which can be traced back to a tender fibrositic nodule in a more central position.

Without doubt all these ætiological factors mentioned are of importance, and in any one case probably many play a part.

Pathology.

Nelson's "Medicine" states that as long ago as 1827 the English surgeon Scudamore pointed out that the rheumatic diseases were essentially diseases of the white fibrous tissues. This has been substantiated by later workers. It is believed that the disease process occurs primarily in the "ground substance" of the mesenchyme existing in the interstices between the fibres and cells of mesenchymal origin. Stockman[11] states that essential changes are in the white fibrous tissue, the lesion consisting in inflammation and hyperplasia of connective tissue in patches, and the condition may be widely spread over the body or confined to a certain area. The swelling and proliferation of white fibrous tissue may be in response to injury or toxic influences of all kinds. Pressure on arterioles and nerve filaments gives secondary effects.

Pemberton[12] refers to fibrositis as occurring in rheumatoid arthritis and osteoarthritis. The changes in the soft structures, often classed under the term myositis, are very important causes of pain and muscular disability in these cases. In the early stages muscles show little pathological change; but in more advanced cases the histological picture is definite. The abnormality is best seen between the muscle bundles, where inflammatory changes occur, followed by cellular invasion and eventually fibrosis. This process accounts for the symptoms of stiffness and pain on movement of joints and soft tissues. In acute brachial neuritis and lumbago one would not expect any pathological change, but one repeatedly feels the characteristic induration of tissues.

As white fibrous tissue is found in practically all parts of the body, it is not surprising that symptoms can be so widely spread. And since fibrous tissue is distributed in soft structures, fibrositis manifests itself usually in muscles and nerves. This manifestation may be general or local. If it is general, the area may be tense, owing to the swelling of the tissues or to overlying muscular spasm. If local, we have the most important sign of fibrositis—the nodule.

The fibrositic nodule may vary in size and shape; the largest may be as big as an almond, and the smaller just palpable. In the acute stages the nodules may be so small that they cannot be felt. They are regarded by all authorities as distinct from those seen in rheumatic fever. They are situated in the belly of the muscle or in the fascial sheaths covering the muscles and can be frequently demonstrated in the trapezius, the muscles of the back, and the buttock, where the condition is frequently spoken of as a buttock bursitis. I think that the bursitis is less common than the nodule in the muscle belly, for frequently one can palpate tender cords or strands of indurated tissue in the *gluteus maximus*, quite apart from situations where bursæ are found.

With this pathological picture in mind, I hope a clearer conception is obtained of the diverse conditions met with in general practice. I would call your attention to an excellent description of the condition, in *The Lancet* of January 21, 1911, by Maxwell Telling.[13]

Symptomatology.

The most usual complaint is "rheumatics" or "neuritis". By that the patient means pain and stiffness and sometimes disturbance of sensation. The pain may vary from mild to the most agonizing. All of you have known cases of acute brachial neuritis in which sleep has been impossible without the aid of morphine, the usual analgesics being valueless. The distribution of the pain is the best guide to the local condition present. For example, occipital neuralgia will lead you down to the fibrositic nodule in the upper part of the neck, usually at the base of the occiput. Pressure on this will cause intense pain. If the pain is not referred, it may be local. In brachial neuritis and sciatica the pain is referred down the whole course of the nerve, whereas the condition may be entirely in the brachial or lumbo-sacral plexus or in the muscles near by. Frequently a case commences as a lumbago, the inflammatory process spreading down the fibrous tissue into the buttock and into the

fibrous nerve sheaths or into the interstitial fibrous tissue of the nerves, this inflammation resulting in irritation severe enough to cause intense pain. If there is much inflammation, there may be, apart from pain, a considerable loss of sensation; and actual pressure may possibly occur on the motor nerve, though I think this is unusual. Any weakness of muscles is usually due to wasting from pain and disuse or to some alteration in the sympathetico-tonus of the muscle. If the inflammation is mild, there may be such sensations as burning, numbness or partial anæsthesia, with or without alteration of the reflexes. How often a true toxic neuritis occurs I am not sure; probably it occurs very seldom. Much of the pain of fibrositis is due to the local area of tenderness—the fibrositic nodule. Some of the pain is due to associated muscle spasm, in which case it is quickly relieved by some form of heat, for example diathermy, but returns again when the patient cools down. In other cases pain is seen along the affected limbs, for instance in the calf or in the heels. These areas are extremely sensitive, and I think much of the pain is due not to areas of inflammation in muscle or along the nerve, but to areas of hyperalgesia or hyperæsthesia, for the merest, lightest touch will cause the patient great pain. The pain is probably increased by apprehension in a patient whose nerves are unstrung with long acute pain. In the acute stages one finds difficulty in locating nodules because they are not formed early or are too small, or because of overlying muscle spasm. Also there appears an œdema of the tissues, particularly in stout, middle-aged people of the gouty type. The tissues feel tense and somewhat tightly stretched; this condition disappears as improvement supervenes, and after massage there is noticed a laxity of the skin which was not present before.

A person experienced in the feel of nodules can feel them also in normal people; but I believe that palpable nodules are always evidence of a previous attack of fibrositis. These nodules have fibrosed, are very hard, and usually treatment will not affect them very greatly.

There is not infrequently a neuralgic pain in the distribution of one of the lower dorsal or lumbar nerves. These patients usually show some areas of fibrositis around the spinal column at or about the origin of the nerves. An X ray picture may frequently reveal some osteoarthritic changes.

It is here that I must direct your attention to the examination of the patient. For a proper and thorough examination the room must be warm, as any chilliness will prevent proper relaxation of the muscles. The patient must be symmetrically disposed in a comfortable position. Palpation of suspected areas must not be cursory, but must be made in a systematic, careful manner. Comparison of one side with the other is essential, and both light and deep pressure is required. An experienced sense of touch is necessary and must be cultivated to the highest degree. The areas commonly affected are shown by James Mennell in his book on "Backache".[14]

Some of the patients with the most acute sciatica I have encountered have on X ray examination shown osteoarthritic changes of the vertebræ. After the removal of sources of toxæmia and treatment by means of manipulation of the lumbar vertebræ, massage and short wave diathermy, these patients have been cured of their pain. The cure has resulted, to my way of thinking, in the relief of tension and pressure on the nerves, whether caused by a localized fibrositic condition of by adhesions in and around those nerves. Some of these patients have been quite well now for up to two years. I am quite sure that the radiological appearances will be the same.

Stiffness is another symptom which may be complained of. It may be general, or the more local stiffness, for example of the neck, back or joints. If it is general, the patient finds he cannot move about as quickly as he used to; he wakes in the morning stiff all over and takes an hour or so to free himself up. This condition occurs infrequently with rheumatoid arthritis, and in my experience one of the first symptoms discovered in the history of onset is general stiffness. Also one of the first signs of improvement noticed in an established case of rheumatoid arthritis is the abolition of this stiffness. Pemberton is of the belief that much of the pain and stiffness in arthritis is due to peri-articular fibrositis. Great relief from symptoms is obtained by treatment of this condition. In the general cases of fibrositis the patient may or may not look ill; he is usually not so tired as in the true cases of early rheumatoid arthritis. Also the symptoms of stiffness and pain in fibrositis are confined to muscles rather than to the smaller joints, as in rheumatoid arthritis. If these patients with fibrositis were unrelieved, the constitutional or toxic factor not removed, who knows but that their condition would develop into generalized osteo-arthritis or true rheumatoid arthritis.

Another symptom is fibrositic headache. This is a type of headache which may be continuous or intermittent, varying in its intensity and duration. It may be worse in the morning, and is usually concentrated at the back of the neck, in the occipital region. There may be a neuralgia of the nerves of the scalp; this, I believe, is due to irritation by fibrositic deposits in the neck, where an exquisitely tender nodule can usually be felt. I have felt this so frequently now that I am sure I am not mistaken, though I must admit that at first I thought the tenderness was due to pressure over the bodies or lateral processes of the vertebræ. But when one feels a normal neck there is no tenderness, and by careful palpation in cases of this nature there is always found to be a difference between the two sides. Care must be taken that the position of the head is not to one side or the other. It was taught by the Swedish school of massage that headaches could be cured by massage on these areas; and

again, one hears frequently that manipulation by an osteopath has cured a headache in a few minutes. Various other types of fibrositis have been described, such as fibrositis of the chest and abdominal wall.

Another symptom not frequently complained of is tenderness. Strangely enough, patients do not find these areas of tenderness themselves; but on examination, as soon as pressure is applied by the finger on a fibrositic nodule, the patient will say: "That's the spot."

Diagnosis.

General fibrositis must be distinguished from several conditions.

Malingering. In malingering patients there are no tender nodules, usually no remissions, and an absence of any apparent cause for the condition.

Rheumatoid Arthritis and Osteoarthritis. In both rheumatoid arthritis and osteoarthritis there is always an element of fibrositis. In some cases of rheumatoid arthritis it is the most prominent feature, and diagnosis of this condition can be made only by a careful X ray examination, which may show minimal changes in joints and not infrequently a general osteoporosis of bone. Another helpful point is that a raised blood sedimentation rate is more common in rheumatoid arthritis; the rate is usually normal in osteoarthritis and fibrositis.

Gout. The history of onset of pain and swelling in the big toe, or the presence of tophi, will lead one to suspect gout. There may be a history of gout in the family, and the habits of the patient may predispose him to it. The blood uric acid content will be raised in most cases. The greatest difficulty may be experienced with the type of case described as chronic gout, which is probably mostly fibrositic in nature.

Rheumatic Fever. The age of the patient and the presence of fever and sweats should assist in the diagnosis of rheumatic fever. The blood sedimentation test shows a higher rate of fall in rheumatic fever than in fibrositis. The presence of nodules in rheumatic fever may lead to some difficulties, but they are usually more superficial and more transient than in fibrositis.

Gonococcal Rheumatism. Gonococcal rheumatism may take the form of acute, subacute or chronic fibrositis affecting the regions of the back, shoulder or the feet. The history of recent gonorrhœa and the appearance of joint manifestations confirm the diagnosis.

True Toxic Neuritis or Multiple Neuritis. True toxic neuritis or multiple neuritis is, in my experience, a rare condition and is usually associated with some of the specific poisons, such as arsenic, lead, alcohol and the toxic products of the diphtheria bacillus. It is more peripheral in distribution than fibrositis, frequently bilateral, and more commonly motor than sensory in its manifestations.

Sciatica. It is with sciatica that the greatest difficulty is experienced and the greatest diversity of opinion exists. A useful classification is that given by Barnes Burt,[15] who divides sciatica into three main groups: (i) root sciatica, (ii) trunk sciatica, (iii) referred sciatica.

Root sciatica is most commonly due to intervertebral arthritis, periarthritis, or to strain of the lumbar vertebræ. It may also be due to pressure from newgrowths, either in the spinal column, the spinal cord or nearby structures. Trunk sciatica is the common sciatica, due to the spread of inflammation in the fibrous tissues of the *gluteus maximus, gluteus medius* or pyriformis muscle. Referred sciatica is that due to a referred pain from inflammation in some structure supplied by the lumbosacral plexus. Uterine and ovarian conditions may give rise to a referred sciatica, just as a loaded rectum also gives symptoms down the leg. The diagnosis requires considerable care and experience in most cases. Osteoarthritis of the hip joint is another condition which may give rise to pain, but should not give any difficulty in diagnosis.

Brachial Neuritis. In acute cases of brachial neuritis the pain is so severe that diagnosis is usually easy. In the more chronic cases, with pain about the shoulder girdle, extending down the arm, there are several conditions usually called neuritis which are not quite of a fibrositic nature. A type of case frequently referred to me is that in which periarticular adhesions of the shoulder joint are present. Examination of such patients reveals a limitation of movement in one or another direction or in all directions. These patients have not a true fibrositis, but I have known the development of adhesions to follow it. Treatment of periarticular adhesions of the shoulder joint is very different from treatment of neuritis. Again, pain down the arm may be due to digestive disturbances or to chronic cholecystitis, to cardiac disturbances or to cervical rib.

Intercostal Neuralgia. Intercostal neuralgia must be diagnosed chiefly from post-herpetic neuralgia and that due to pressure from newgrowth or arthritis of the vertebræ.

Chronic Lumbago. Pain in the back may be due to a number of causes and great care must be taken before labelling a chronic backache as due to fibrositis. For example, renal or ovarian conditions may cause pain in the back. A retroversion of the uterus is a common cause of backache, but one of the most frequent causes is chronic cervicitis. The cervix in this condition is a focus of infection and often the direct cause of chronic lumbago of a fibrositic nature.

Occupational Spasm. Another condition which I have not mentioned is that due to occupational spasm of the *levator anguli scapulæ* or rhomboids. I have had several cases of this nature, and diagnosis is not difficult if the history is carefully taken. I should like to give you a brief outline of the history of some cases that have come under my notice. There is usually some postural abnormality and an occupational strain.

Case I.—The patient was referred to me as possibly having early spondylitis. She was a girl aged eighteen, with pain referred to the region of the right scapula, chiefly on performing three acts, namely, milking a cow, playing a piano, and sitting reading, holding a book. Examination revealed a marked forward curve in the upper dorsal region, the head being poked well forward. Being of a simple, shy and nervous temperament, the patient usually hung her head on the side towards the pain; with this there was nearly always an elevation of the right shoulder girdle. This was her posture while playing the piano, sitting and reading, and, I should imagine, when milking the cows. The pain was never present whilst she was in bed, and usually subsided quickly with rest. No treatment helped her at all, until she was instructed to relax the shoulder girdle. This, with postural exercises, rapidly improved the condition, which had been present for some years.

Case II.—The second patient was a female, aged twenty-nine years, with a posture similar to that in Case I and an occupation in which prolonged tension was necessary. She worked as an office girl, continuously using typewriter, comptometer and calculating machines.

Case III.—The patient in this instance was myself. I have had pain of this nature after driving a motor car, and it was always due to improper relaxation of the shoulder girdle at the steering wheel. Relief was rapidly obtained by relaxation.[aa]

Prognosis.

The prognosis in fibrositis is usually good, since it is the most curable form of chronic rheumatism. In the acute cases rapid relief is to be expected. In the more chronic cases time and a fair amount of treatment must be given before results can be obtained. The presence or absence of foci of infection influences the prognosis, and so does the ability to remove the toxins of metabolic origin. Good results will not be obtained without using every method of treatment available.

Treatment.

There are several aspects of treatment to be considered. That suitable for acute cases is usually vastly different from that suitable for more chronic cases. The objects of treatment must be: (i) to relieve pain and stiffness; (ii) to deal effectively with the cause of these symptoms, which in most cases is the fibrositic nodule; (iii) to combat the underlying cause of the disease, which must be considered from several aspects: the removal of foci of infection and metabolic toxæmia *et cetera*; (iv) to build up the patient's resistance to infection; and (v) to prevent subsequent attacks.

Treatment may be general or local. Some methods of treatment do not come under the term "physical therapy", and I hope to hear the opinion of those more qualified to speak on these aspects of the subject.

General Measures.

Of the general measures I shall mention:

Rest.—Rest will nearly always relieve pain and help the patient to improve in health; but it may be detrimental if the patient is placed in hospital with complete rest and on a full diet. Elimination of waste products will not be so complete and the result will be indifferent.

Climate.—A change of climate is sometimes necessary for the complete cure of a patient. Whether it is the actual change of climate, the complete change of surroundings, or the absence of stress and worries from social and business life is a matter for conjecture. Many people are benefited by a sea voyage, and particularly valuable is the removal of elderly patients to a warmer climate during cold, damp weather.

Drugs.—Drugs are of importance in general treatment for the relief of pain and elimination of toxæmia. In conjunction with physical therapy fewer drugs are required.

Vaccine Treatment.—I am convinced that the best results are obtained by a combination of vaccine treatment with physical therapy.

Diet.—I regard diet as one of the most important factors in treatment. A correction of the diet so that it is well balanced and not in excess of the patient's requirements will aid in the relief of the condition and will act in the prevention of further attacks. In the obese a weight-reduction diet is valuable.

Gastro-Intestinal Treatment.—Many authorities consider gastro-intestinal treatment of paramount importance, and the more experience I have, the more I am convinced that the most common cause of toxæmia, producing fibrositis, comes from the gastro-intestinal tract. Treatment is by a laxative diet, colonic irrigation or suitable aperients. The first two I find the most valuable.

Removal of Foci of Infection.—The removal of foci of infection is an important general treatment.

General Physical Therapy.—As a method of eliminating toxæmia I find hyperthermia produced by baths, foam baths or electric light cabinet baths of great value. One repeatedly sees patients with a sallow, toxic look returning with ruddy complexions after two or three "hot-boxes", as they are called.

General Massage.—General massage is also an important method of treatment for the elimination of toxæmia and the improvement of the general vasomotor, vascular and lymphatic circulation of the body.

General Ultra-Violet Light Baths.—Ultra-violet light baths are of use as a general tonic to increase resistance and improve skin reactions.

Hydrotherapy.—Hydrotherapy, as given by the Aix Vichy under-water massage douche and by the Scotch douche, is a valuable general tonic to the skin and system generally. It is usually given following a treatment by hyperthermia.

Exercises.—In all cases exercises are prescribed with a view to increasing physical fitness, maintaining mobility and aiding elimination of toxins. In some cases specific exercises for the treatment of constipation are given.

Local Measures.

Local measures are nearly always of value. There are many of them, and to rely on any one particular method of treatment is to court failure. The object is to relieve pain and promote the absorption of infiltration. A proper understanding of all methods of treatment is essential for success. Some are of more value in certain conditions, others of less value. Some are used in acute stages, others never in acute stages.

Ionization.—Ionization is the passage of an electric current for the relief of pain or the introduction of drugs. It is of more value in the acute stages of fibrositis than diathermy, though one must not expect dramatic results.

Massage.—Massage is never given in acute cases, except perhaps effleurage.

Diathermy.—Either short wave or long wave diathermy may accentuate pain, but usually will cause improvement. Some prefer treatment with infra-red radiation, and in acute cases I find this very valuable. Others are fond of treatment by the static current, though of recent years this has not been popular, except in America.

Other Methods.—There are other local methods which I need not discuss; but in all cases massage is of the greatest value. I will refer later to the more local treatment by massage. During treatment it is important to see that the movement of joints is maintained by passive movements, at least once or twice a day, right from the onset. If this was done as far as possible, much of the resultant stiffness due to adhesions would be prevented.

Some Clinical Conditions Considered in Detail.

Let us now consider some of the clinical conditions and deal with them more precisely. The methods of treatment discussed are in no way original; but I have found them most useful during my experience.

Brachial Neuralgia or Neuritis.

Brachial neuralgia or neuritis, as I have said before, may be very acute, causing a loss of sleep and a very considerable upset of all the functions of the body. This disturbance in many cases may be for some days a vicious circle. The patient appears worn out, drawn and sallow, very apprehensive, and resents all movement. On examination some indurated tender area can usually be found in either the anterior or posterior triangle of the neck. The pain is of a severe neuralgic type, or may be shooting in nature; it is nearly always made worse by any change of position of the limb. The muscles are usually in spasm, and this may be one of the causes of the acute exacerbations of pain. Areas of tenderness are found at various places down the arm, not necessarily along the course of the nerve trunk, and usually there is no induration at those points. I am not convinced that these areas of tenderness are due to a perineuritis or an inflammation of the nerve trunk; they are possibly in many cases areas of hyperæsthesia. There is a test, called the sub-faradic test, which is useful to map out these areas. (A mild faradic current or battery current is used, the current strength being insufficient to cause an electrical response of muscle or nerve.) It is in these acute cases that rest is so essential, while as much support and fixation as possible are given to the arm. Any treatment by diathermy or massage or movements usually aggravates the condition. I prefer to leave a radiant heat or infra-red lamp for the patient's use at any time for the relief of pain. Foments or plastin are often a help; static electricity or treatment with oudin current or ionization has also been advocated by many authorities. The local application of ultra-violet light to produce an erythema may have a decongesting or counter-irritant effect, with some relief. General treatment should be on the lines of a light diet and ample fluids, and a search should be made for foci of infection. Not infrequently no obvious foci are present, but the patient may have been constipated or have undergone a severe mental or physical strain. Colonic stasis is usually not improved by the necessary administration of morphine. It is in these cases that colonic irrigation[17][18] is of such value, intestinal absorption being quickly relieved. I prefer this to purgation, which is much more upsetting to the patient. Colonic irrigation can be given without much disturbance. I use a long colonic tube of large calibre, insert it about four to six inches into the rectum, and, by means of a Y-piece, tank and bucket, the colon can be thoroughly washed out. After a wide experience in its use I can vouch for the value of this treatment. I must emphasize the importance of cleansing the colon before any other method of treatment is given. When purgatives are given there is liquefaction of the fæces, and if elimination is not rapid further absorption occurs. The next important step is to eliminate toxins by the skin by means of copious sweating during a period of mild pyrexia. This may be produced with diathermy or a cradle of lamps over the bed or an electric light cabinet bath, which may be reclining or upright. Any of these methods will initiate perspiration; blankets and hot water bottles will maintain it. It is important to have the patient perspiring for at least half an hour. I try to elevate the temperature to 37·8° or 38·3° C. (100° or 101° F.). Apart from the elimination of toxins there is a general stimulation of metabolism and circulation which has a beneficial action. As you may imagine, such a stimulation of circulation may only lead to further absorption if the large bowel is not cleared of refuse beforehand. This mild hyperthermia can be repeated every second day and is usually followed by a sponge bath, or, if the case is not too acute, by hydrotherapy. As the acute stage subsides, it is found that some residual pain and stiffness remain and must be treated by more local measures for complete relief to be obtained.

I will admit that this acute condition usually settles down with nothing but rest in bed, but my experience has taught me that a rapid turn for the better is obtained by physical methods. In subacute cases which may last for several weeks, rapid cures frequently occur. In the more chronic cases more energetic measures are needed, for example, massage and exercises.

I have seen many stiff shoulders following an attack of acute brachial neuritis. Usually the pain is so acute that rest of the arm in a sling is necessary; this allows the development of adhesions in the muscles and the fibrous tissue, quite apart from the adaptive shortening of the adductor group. Adhesions can be prevented by local treatment, with passive and active movements to prevent their formation around the shoulder joint.

Once adhesions form, the condition appears to be progressive, for the patient will not abduct the arm and thus still more adhesions are formed. If this is the case, manipulation of the shoulder joint under an anæsthetic, followed by physical treatment, will quickly restore function. Not infrequently mild cases of brachial neuritis do not respond to treatment until an offending tooth is extracted or the system is cleansed of auto-intoxication by colonic lavage, a restricted diet or abstinence from alcohol.

Stiff Neck.

Stiff neck may be acute or chronic. In the acute condition there may be spasm of the muscles of the neck, and often tender areas in the trapezius or *longus colli* may be felt. In more chronic cases most of the symptoms are referred to the neck and the occipital region, with or without fibrositic headache. Pain and stiffness are the chief symptoms, and palpation of the neck will reveal many tender nodules. There may or may not be a history of injury; usually there is not. X ray examination of the cervical vertebræ may in some cases reveal slight osteoarthritis. If teeth or tonsils are obvious foci of infection, they must be removed. The remaining pain or stiffness must then be treated by active measures.

One method I have used with success is head suspension with manipulation, the whole weight of the body beieng suspended by the neck before manipulation is performed.[19] In one case this was successful when pressure was due to cervical rib. Another method is to exert traction on the head when the patient is lying supine and to put the head through a complete range of movements.[20]

Following either of these treatments, radiant heat, massage and diathermy are given to prevent subsequent stiffness and reaction. Patients who usually do not respond are those with some dental infection.

For the various forms of muscular rheumatism, myositis and myalgia elsewhere in the body, with lumbago as a typical example, the general treatment is much the same; and here I must emphasize the importance of removing waste products by means of colonic lavage and sweating. The condition may be in the upper muscles of the back or in the fascial planes over the sacrum, the lumbosacral region being the commonest site. The cases may be acute or chronic. In acute cases rest is necessary, and the patients respond to radiant heat and diathermy. Diathermy very seldom causes any increase in the symptoms, probably because much of the acute pain is due to muscle spasm, for which diathermy is so effective. In the more chronic cases massage, manipulation and exercises are required. The acute stage will usually disappear readily, but the longer it is present and the longer any resultant stiffness remains, the more fibrosis occurs. Cases of long duration become very difficult to cure. In subacute and chronic cases massage is of the greatest value. On examination there will usually be found tender nodules in the fascia and muscles of the affected part. For the proper examination and palpation of these fibrositic nodules, I repeat that it is absolutely essential for the patient to be in a relaxed position, so that the palpating fingers do not have to overcome any resistance; moreover, the nodule may be very deep in the substance of the muscle.

The type of massage used is one that requires considerable skill, experience and physical strength.[6][21][22] The nodule is located and carefully massaged. At first this is a very painful procedure, but after a few minutes the pain becomes less and eventually strong pressure can be exerted without causing pain. The masseur exerts pressure with the pads of the fingers, using a stiff arm and shoulder, so that weight can be exerted without much muscular effort, the object being to disperse the nodule.

Many authorities have spoken of the value of this method of treatment. From the very early days it has been advocated by the Swedish school of massage. Arvedsen is reputed to have said to a student massaging a patient: "You can't be doing any good, your patient looks too happy." It has been said that bruises appear owing to the breaking up of these nodular collections. With this I am not in agreement, for the patients with this condition usually bruise very easily on any part of the body. In the more chronic cases I have found that the nodules are not appreciably affected at first, but gradually they disappear with force and manipulation.

Recently a technique of treatment for these more chronic and hard nodules was reported. The method used was to locate the nodule and deal it a sharp light blow with a wooden mallet.[6][22] I have not as yet tried this, though I must admit that many of the patients I see would be benefited by such a mechanical means of destruction of the nodule.

After treatment there is usually a general reaction of exhaustion and tiredness, and it is the custom for those experienced in this method of treatment not to deal with too many nodules at a time. Some have suggested that the nodule contains

collections of toxins, bacterial and otherwise, or even bacteria themselves, and a too great flooding of the system with poisons would be undesirable. It is here that the confidence of a patient is likely to be lost. Reactions must be mild or avoided if possible. There is a great tendency to do too much at a time. The local reaction is one of bruising and soreness, with a greater amount of pain and stiffness. This, and the general reaction, can be minimized by giving either some diathermy or radiant heat baths following the treatment by massage. The hyperæmia induced tends to carry away any waste products. In many cases some reaction is unavoidable. In the more chronic longer courses of treatment are necessary and, as with the relieved acute cases, exercises play a very important part in the recovery and prevent a recurrence of the condition.

Another method of treatment which I have found of value is the stretching of the tissues by means of certain forced movements or by manipulation. It is not usual to give an anæsthetic, but I believe many advocate this and claim quicker results. It may be that the reactions will be more severe. Many movements can be practised by a man of average physique. It requires not only physical strength, but a certain height and length of arm, to deal effectively with most patients. The couch should be of convenient height and the patient should be suitably clothed for freedom of movement and surety of grip. These movements have been described in many books and, used with care by an experienced person, they will be found of great use in selected cases.[6][23][24]

Reaction again follows treatment and is reduced or relieved as before. Exercises are an important part of the after-treatment. Other methods for the relief of these localized areas have been suggested. For example, injection of the nodule with lipovaccine, "Novocain", oxygen and a 10% solution of glucose.

Another method which has become very popular in England during the last two years, and which I have used myself very considerably, is that of histamine ionization.[25] The technique is to apply a solution of histamine or ergamine acid phosphate, 1 in 5,000, by ionization. Being an alkaloid, the drug is introduced into the skin under the anode, using direct current. The method was originally suggested by Deutsch.

Pemberton, in America, described the skin capillaries in chronic rheumatic subjects as showing a spastic condition due to some abnormal vaso-constricting substance or a lack of vaso-dilator substance normally present in the blood stream. As stated in "The Reports on Chronic Rheumatic Diseases",[26] the work of Sir Thomas Lewis has shown that local irritation of the skin, by whatever means, will produce in the cells which are stimulated some substance which must be regarded as the cause of the erythema characteristically following such stimulation. The substance resembles histamine in its physiological effects and has been referred to as the H-substance. Many methods of physical treatment derive some of their beneficial effects from the production of this substance in the skin. Such treatments as massage, ultra-violet light and hydrotherapy all tend to produce an erythema. In Germany a method used was to spray poppy seeds with tremendous velocity from an air-gun onto the body of the patient. In all cases there is a triple response, as shown by Lewis—local vaso-dilatation, local exudation, and the flare or local hyperæmia resulting from a nervous reflex action. Deutsch maintains that there is a fourth phenomenon—the muscles underlying the area of skin stimulated also share in the vaso-dilatation.

The treatment is safe, easily and painlessly given, and the response can be localized to the affected areas and repeated as often as necessary. This is not so with the present vogue of histamine by injection, when the treatment is more evanescent in its effects and the amount of local dilatation probably not so great as with the local treatment, because there is danger in giving a sufficiently big dose by injection. From what I have seen of treatment by "Immenin" and bee venom, I feel sure that many of the beneficial results are due to some H-substance present in the venom. There is always a flare produced, intense itching and often a general flush, such as is seen when histamine is given by injection.

Before finishing with chronic backache I would emphasize the importance of dealing with foci of infection, particularly in the *cervix uteri*, for, in my experience, cervicitis is the most common cause of backache in women. Again, some cases of chronic backache showing osteoarthritic changes in the vertebræ can usually be benefited by mobilization of the joints by manipulation and local treatment, not forgetting the importance of foci of infection and general ill-health.

Sciatica.

I feel dubious about expressing views on such a notoriously difficult subject as sciatica. Opinions as to causation and methods of treatment are so various and results so frequently disappointing that the subject calls for the most careful study. The cases I have experienced have varied from the acute to the very chronic. Sciatica is so important a problem that it deserves more than the remaining time at my disposal, and for a more complete study one must consider first its anatomy. For this I would refer you to works on surgical anatomy.[27]

Macgregor divides sciatica into two types: secondary sciatica and primary sciatica. But from a consideration of his work one gains the impression that the primary basis of sciatica is anatomical in the majority of cases. The sciatic nerve may be more commonly involved because of its peculiar anatomical relationship; but at the same time it must be remembered that a pathological basis has probably as much influence on the causation of the disease. By that I mean that more commonly the

disease is brought about by a pathological condition due to fibrositis superimposed upon the well-known anatomical variations and the common pathological changes of the lumbar and sacral vertebræ. Therefore it is not beyond the bounds of reason to surmise that fibrositis superimposed on these variations is the cause of root sciatica, radiculitis or neurodocitis. It is not uncommon to find considerable variations in the anatomy of that region occurring without symptoms; it is also not uncommon to obtain complete relief from sciatica in the presence of definite anatomical and pathological changes in the vertebræ, and this relief is frequently obtained by the same general treatment of fibrositis already discussed. With the subsidence of the fibrositic element relief is obtained.

Trunk Sciatica. Trunk sciatica is the common form known as idiopathic or primary sciatica, and is most often due to interstitial neuritis or fibrositis. Wilfrid Harris,[28] like other authorities, such as Osler and Price, regards it

> as a condition of acute or chronic inflammation of the supporting and connective tissues, or fibrous structures of the body, such as fascial aponeuroses, and subcutaneous tissues, ligaments, tendons, periosteum, sheaths of muscles, and the supporting tissue binding together the separate nerve fibres into the bundles we call nerves. As a result of such inflammation the fibres are compressed, the irritant effects causing pain and cutaneous hyperæsthesia, and the deep tenderness in the sensory areas involved, with a tenderness over the nerve itself due to involvement of the *nervi nervorum* supplying the nerve sheath.

He regards the common cause of sciatica as a fibrositis extending down into the interstitial tissue of the nerves, that is, an interstitial neuritis.

From a study of these conditions I have to admit that there is very little in the literature concerning the pathology. In a case of sciatic neuritis which came to autopsy there was an entire absence of parenchymatous degeneration of the nerve fibres, but an interstitial cellular infiltration was present. The nerve was described as being inflamed, pink in colour, and œdematous. Others have reported the same finding at operation.

I will dismiss the third type as being not connected with my paper. By this I mean the referred sciaticas, due to some pathological processes in any part of the body supplied by the lumbo-sacral plexus. These are really true sciatic neuralgias and are quite distinct from the true parenchymatous neuritis, which is described in most text-books under the heading of multiple neuritis.

The pain in sciatica may be acute or chronic or of a neuralgic type, with or without acute exacerbations. It is usually made worse by walking, and even sitting may be difficult. Sensitive spots are usually felt and are described as being most frequently at the sciatic notch or along the course of the nerve into the thigh which passes through the great sciatic foramen and emerges from below the pyriformis. This I find not frequently to be a tender spot. Usually tenderness is elicited in the strands of the *gluteus maximus* at a point midway between the great trochanter and the postero-superior iliac spine. This point is at least one or two inches above the sciatic notch. I do not commonly find tenderness along the sciatic nerve, though occasionally I have observed it even on the external popliteal nerve at the head of the fibula. Frequently one discovers tenderness in the muscles of the calf, which may possibly be hyperæsthesia; this may even be present as low as the foot.

There is usually a characteristic posture or gait. Any scoliosis present may be homolateral to ease extension of the inflamed nerve trunk, or contralateral to open the articulations of the vertebræ on the affected side, or, more rarely, alternating scoliosis, the object of which is more difficult to explain.

Wasting may be present, but a reaction of degeneration is very uncommon.

The knee jerks are usually increased, though they may be decreased when wasting is pronounced; the ankle jerks are usually diminished or absent, and Lasegue's sign and Mennell's sign are positive. In acute cases both the latter signs are always present. In the more chronic cases the one or the other may be present, and the degree of the sign shows great variation. Even in some normal people Lasegue's sign is partially present, and I have seen it present in definite cases of sacro-iliac conditions *et cetera*.

As I have said before, there is usually a history of previous lumbago, the process extending into the gluteal muscles and the sciatic nerve. I have seen some cases of sciatic pain or leg ache in which few of the characteristic signs of sciatic neuritis are present; but on palpation of the buttock tender nodules are felt along the upper border of the ilium, or near the postero-superior iliac spine, or over the posterior part of the sacrum, pressure on which causes intense pain radiating down the back of the thigh. In these cases the pain is seldom distributed below the knee.

As regards treatment, the same general principles apply. Elimination of toxins by colonic lavage, copious fluids and sweating are important preliminary and curative measures. A search for obvious foci of infection is carried on in the meantime. It is here that I would call your attention to a case I recently had in which an acute sciatic neuritis of some months' duration was present in a young woman in poor physical health. The tonsils appeared small and innocent. X ray examination revealed three apical abscesses in the teeth. These were removed with some improvement, but still the condition remained in the chronic or subacute stage. Some weeks after, when the patient contracted a cold and sore throat, the neuritis became more acute. On examination several small points of pus were visible on the tonsils. The tonsils were removed and within two days the neuritis was much improved; within a week it was completely relieved without any recurrence. I have directed your attention to this case to emphasize the importance of never being satisfied, when the condition will not clear up entirely, until every possible focus of infection is removed.

I can call to mind a public hospital case of severe rheumatoid arthritis in which the focus of infection was the cervix. With coagulation of that area the patient became practically normal, but the arthritis recurred with an attack of tonsillitis and furunculosis. A vaccine prepared again gave an improvement in the condition; but it recurred in all severity. On further examination the same small buried collections of pus were found in an otherwise innocent-looking pair of tonsils. Diathermy coagulation of these again produced a marked improvement.

Other cases of sciatic pain have not responded in any way until a satisfactorily healthy condition of the *cervix uteri* has been obtained by electrical treatment. In some cases there is only a small erosion of the cervix, in others more gross disease. One patient with rheumatoid arthritis responded to intrapelvic diathermy and zinc ionization of the cervix without much appreciable benefit to the local condition.

Of the injection treatment of the sciatic nerve I have little to say, for my experience is such that I do not see the relieved patients, but only those unrelieved. I am sure others more experienced in this method of treatment will express an opinion tonight.

Once the acute stage of sciatic neuritis is over, the patient is left frequently with a more chronic pain, with some postural abnormality and with adhesions. For the complete cure of the patient it is necessary to commence manipulation, to stretch any adhesions, or mobilize the vertebræ; as soon as possible, exercises are ordered to maintain mobility and posture.

There are many other points in the treatment of acute and chronic sciatica which I will not discuss; for I do not think that the technique of electrical treatment would interest you.

Other Conditions.

There are several other conditions of a fibrositic nature which I shall briefly deal with. For example, Osler and Price mention Dupuytren's contracture as being due to a chronic fibrositis of fascia; they also mention tenosynovitis of various kinds as being due to an inflammation or a fibrositis of the fibrous tendon sheaths, and bursitis as being of the same nature. Some cases of bursitis even go beyond the fibrous tissue stage and show a deposit of calcium in the affected area.

Finally, there is panniculitis,[1] a term used for a condition of fibrositis affecting the subcutaneous tissues of the *panniculus adiposus*. It is not very common, most usually occurs in the obese and in females at the time of the menopause. It is believed to be associated with endocrine deficiency. The commonest sites are at the back of the neck, the shoulder, the lumbar and gluteal regions, and on the inner sides of the elbows and knees. The areas are usually adipose, feel nodular and very tender, and show dimpling on picking up the skin and subcutaneous tissues. This is probably due to the development of fibrous tissue in the loose areolar tissue in the *panniculus adiposus*. The pain is due to involvement of subcutaneous nerves in the inflamed areas or to pressure from fibrosis. Patients respond well to a reduction diet, relief of constipation, stimulation of endocrine glands by intrapelvic diathermy, or to the administration of thyreoid and physical treatment, such as vigorous massage, sweating and hydrotherapy for the promotion of skin reactions.

Prevention of Fibrositis.

Many observers comment on the lack of sunshine and exercise in the winter months, particularly in England; the effect of cold and damp, either at work or in homes in slum areas; and effects due to chilling of the skin fostered by lack of attention to general principles of health in those whose vasomotor reactions make them feel cold more, with lack of response to changes in temperature. Much of this may be due to unsuitable clothing. We clothe ourselves in civilization so that these reactions are lost, and for this we must suffer. Grenfell, in Labrador, tells of the Eskimo clad only in dungarees who rowed him to an island in an open boat in a blizzard, while he (Grenfell) was in furs.

Someone has said that the climate we live in is more or less constant and is that which exists between our singlet and skin. If it is cold, we put on more clothes; if hot, they come off. In other words, the skin has very little to do with our conservation or loss of heat. I believe that the less we coddle ourselves, the better it is for skin reactions. The cold plunge in the morning may be fit only for Spartans, but I am sure cutaneous reactions and general health would be better for it. It is now more common for us to work in heated buildings; and clothes must be conventional. With the advent of improved facilities for sport and more leisure, surely the race must become less prone to fibrositis. But this will not counteract the ill-effects of high living or the chronic intoxications of metabolic or bacterial origin. When all is said and done, the general health is probably the most important factor. Freedom from illness with each individual is therefore a personal matter in these enlightened days.

Lastly, I must apologize for not having given you anything very original, but I hope that my paper will help some of you to understand and more efficiently treat one of the most important conditions in general medical practice.

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GAS ANÆSTHESIA IN A MELBOURNE PUBLIC HOSPITAL, 1931-1936.

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In December, 1931, the writer published in this journal a report on the use of gaseous anæsthetics in a Melbourne metropolitan hospital in the years 1925-1931. After an interval of five years it seemed desirable again to review the records, principally to investigate whether recent advances in anæsthetic technique and education were reflected in a lowered mortality. The results of this inquiry are embodied in the present report, which is strictly a continuation of the work done in 1931. The two sets of figures will be therefore compared and contrasted in the present paper.

Part I. Statistical Review.

Number of Administrations.

Administrations of anæsthetic gases for routine major surgery in the years 1931-1936 number 2,183, distributed as follows:

Nitrous oxide-oxygen	638
Ethylene-oxygen	1,460
Unspecified "gas-oxygen"	78
Nitrous oxide-ethylene-oxygen	7
Total	2,183

This total is but little greater than the 1937 administrations in the years 1925-1931; the use of gas anæsthesia was, however, restricted on account of the economic conditions which prevailed in the years 1931-1933. This fact is an argument in favour of a wider use of carbon dioxide absorption methods than at present obtains in our hospital.

The relative popularity of nitrous oxide and of ethylene is obtainable from Table I. Cyclopropane has not yet been employed in our hospital.

Table I.

Relative Frequency of Employment of Nitrous Oxide and of Ethylene, 1931-1936. Unsuccessful administrations are included.

Year.	Nitrous Oxide Cases.	Ethylene Cases.	Ratio Ethylene : Nitrous Oxide.
1931	84	279	3·1 : 1·0
1932	103	302	3·0 : 1·0
1933	95	345	3·6 : 1·0
1934	149	343	2·3 : 1·0
1935	207	191	1·0 : 1·1

The table indicates a steady return to favour of nitrous oxide, the administrations of which in 1935 exceeded those of ethylene for the first time in any year since 1925. In 1928 indeed there were twenty-five administrations of ethylene for each nitrous oxide administration.

The reasons for this revived interest in nitrous oxide are: (i) its relative cheapness, being manufactured locally, whilst ethylene is imported; (ii) an increasing degree of experience on the part of anæsthetists in the handling of this slightly more exacting anæsthetic; (iii) the improvement in modern anæsthetic apparatus, which has discounted some of the difficulties previously encountered in nitrous oxide technique. At the same time the popularity of nitrous oxide extends mainly to the visiting anæsthetists; the less experienced house anæsthetists continue to find ethylene easier to give. The data do not yet admit of any attempt to dogmatize on the relative merits of the two gases. There have been no ethylene fires or explosions.

Success of Administration.

Anæsthesia sufficient for the needs of the surgeon was obtained in 98·7% of administrations (both gases). The percentage of successful administrations (1925-1931) was 97·1. The details are tabulated in Table II.

Table II.

Failures to obtain Satisfactory Anæsthesia, 1931-1936. Ether by the open method was usually substituted. Three cases due to mechanical defect in the apparatus are omitted.

Gas.	Success.	Failure.
Nitrous oxide	635	3=0·47%
Ethylene	1,423	34=2·3%
Nitrous oxide+ethylene	7	
Gas unspecified	77	1=(1·3%)
Total	2,142	38=1·3%

It may appear strange that nitrous oxide, which is somewhat more difficult to give than ethylene, should return a lower rate of failure. The explana-

tion is that, being easier, ethylene is selected by junior house anæsthetists for their earliest gas administrations. Nitrous oxide is left mainly to the visiting anæsthetists, whose task has been lately much facilitated by the provision of modern gas anæsthesia apparatus.

There is no evidence by which one might ascertain the frequency with which ether supplement has been required.

Mortality.

The average mortality "on the table" for both gases (1931-1936) is 0·55%; it has not been practicable to take into account fatalities which occurred after the return of the patient to the ward. The corresponding mortality in the years 1925-1931 was 0·83%. The general position is set out in Table III.

TABLE III.

Mortality, 1931-1936. Unsuccessful administrations included, as having been exposed to the risk of induction with gas.

Gas.	Cases.	Deaths.	Deaths per centum.
Nitrous oxide	638	2	0·31
Ethylene	1,460	10	0·69
Gas unspecified	78	0	—
Nitrous oxide + ethylene	7	0	—
Total	2,183	12	0·55

Whilst it is gratifying to observe a fall in mortality from 0·83% to 0·55%, the death rate under gaseous anæsthetics would still appear to be very high. Particularly does it seem so when it is recalled that the mortality under ether in the hospital (8,900 cases, 1929-1934) is only 0·07%. The anomaly is explained by the fact that ether is administered to robust patients and gaseous anæsthetics mainly to patients who are far from being robust. This is well illustrated in Table IV, in which the anæsthetic risk presented by a series of gas anæsthesia patients receives due recognition.

Since 1932 efforts have been made to record the anæsthetic risk presented by each patient. The familiar classification into four grades of risk was adopted, from "A" (the best) to "D" (the worst), as recommended by the International Anæsthesia Research Society. The number of cases so listed was 1,564, with seven fatalities "on the table". Several anæsthetists were concerned, so that the criteria of anæsthetic risk were not quite uniform. Further, there is a tendency amongst inexperienced anæsthetists to over-rate anæsthetic risk. To this extent the series has less value than would be possessed by the work of a single anæsthetist. Even so, it illustrates the class of patient for whom gas anæsthesia is mainly selected in the hospital.

From Table IV it will be seen that gaseous anæsthetics are relatively seldom administered to "A"-risk patients, and more frequently to "C"-risk than to "B"-risk patients. Naturally, "D"-risk patients (those in immediate danger of death, either from the operation or the anæsthesia) are relatively uncommon, even in hospital practice. The table further indicates that no fatalities occurred in "A"-risk or "B"-risk patients; that one death occurred amongst 750 "C"-risk patients (a mortality of 0·13%); and that six deaths occurred amongst 123 "D"-risk patients (a mortality of 4·9%). Even were one to grant that some of the "D"-risk patients might be more legitimately classed as "C" risks, the fact would still remain that in this series the gaseous anæsthetics were associated with no deaths in the healthier classes of patients. In the two more critical classes the anæsthetic mortality was not unduly high under the circumstances.

An inquiry into the individual fatalities listed in Table III will form the second part of this report.

Gas Anæsthesia in Averting Operative Shock.

This somewhat comprehensive group includes those cases in which gas anæsthesia was selected in order to lessen the ordeal of operation on patients who were not good anæsthetic or surgical risks. It therefore includes operations upon patients who were old or who suffered from cardio-renal degeneration, all abdominal sections, operations of great severity upon otherwise healthy patients, and certain grave operations unclassifiable under other headings. The results are set out in Table V.

TABLE V.

Use of Gas Anæsthesia to Avert Operative Shock, with Mortality in such Cases. Unsuccessful administrations are included.

Gas.	Cases, 1931-1936.	Prevention of Shock.	Percentage Prevention of Shock.	Deaths.	Percentage Mortality.
Nitrous oxide ..	638	182	28·5	1	0·59
Ethylene ..	1,460	746	50·9	3	0·40
Nitrous oxide + ethylene ..	7	3	(42·8)	0	0
Unspecified ..	78	33	(42·3)	0	0
Total ..	2,183	964	44·2	4	0·41

TABLE IV.

Anæsthetic Risk Presented by 1,564 Gas Anæsthesia Patients. Classification of risk is made by International Anæsthesia Research Society standards.

Anæsthetic.	Cases.	"A" Risk.	"B" Risk.	"C" Risk.	"D" Risk.	Deaths.
Nitrous oxide	491	56=9·4%	187=38·1%	216=44·0%	32=6·5%	Two. One "C", one "D".
Ethylene	1,049	82=7·8%	353=33·6%	524=50·0%	90=8·6%	Five. All "D".
Unspecified	24		13	10	1	
Total	1,564	138=8·8%	553=35·4%	750=47·9%	123=7·8%	7=0·45%

These figures are closely comparable with those returned by a similar group of cases in the 1925-1931 series; the mortality, however, is slightly reduced. It is not excessive, in view of the poor condition of many of the patients and the magnitude of many of the operations; further, those patients who succumbed were all serious anæsthetic "risks".

Acute Abdominal Emergencies.

There were 237 acute abdominal emergencies, representing 10·9% of the gas administrations, 1931-1936. There were four deaths, or 1·7%, in the 237 cases. This figure is considerably less than the mortality in the corresponding group in the years 1925-1931, and is not excessive when the critical condition of many of the patients is taken into account. The patients who died were all extremely ill. The details are shown in Table VI.

Table VI.

Use of Gas Anæsthesia in Acute Abdominal Conditions, 1931-1936, with Mortality in such cases. Eight unsuccessful administrations of ethylene are included.

Gas.	Cases.	Deaths.	Percentage Mortality.
Nitrous oxide	15	0	0
Ethylene	214	4	1·9
Unspecified	8	0	0
Total	237	4	1·7

The preponderance of ethylene administrations in this group is due to the fact that this gas is usually preferred (especially by the resident anæsthetists) for abdominal operations.

Traumatic Shock.

Gas anæsthesia was administered during 1931-1936 to 100 patients suffering from traumatic shock, that is, to 4·6% of the total patients receiving gas administrations. Of the 100 patients, 22 received nitrous oxide, 75 received ethylene, and in three instances the gas was not stated. There was one unsuccessful ethylene administration and there were no fatalities. The corresponding series for 1925-1931 included 94 cases, with a mortality of 2·1%.

Thyreoid Surgery.

Omitting patients with non-toxic thyreoid adenomata (who, if anæsthetized with gas, are classified in the miscellaneous "good-risk" class), there were 227 thyreoid operations, or 10·0% of the total gas administrations during 1931-1936. There was one fatality. Details will be found in Table VII.

Table VII.

Use of Gas Anæsthesia in Thyreoid Surgery, 1931-1936. There were no unsuccessful administrations.

Gas.	Cases.	Deaths.	Percentage Mortality.
Nitrous oxide	184	0	—
Ethylene	39	1	2·6
Unspecified	4	0	—
Total	227	1	0·44

The patient who died was admittedly very ill, but, as will be later described, it is possible that death might have been prevented. In the series of 1925-1931 there were 163 cases and no deaths. In both series nitrous oxide was largely used, but its popularity for thyreoid surgery as compared with ethylene has shown a great increase in recent years.

Sepsis and Toxæmia.

The sepsis and toxæmia group includes cases of severe cellulitis, carbuncle, juvenile osteomyelitis and gangrene; it excludes those of empyema, chronic bone sepsis in adults, intraabdominal sepsis and septic abortion, all of which are classified elsewhere.

In the series of 1925-1931 the group contained 107 cases without fatality. The present series is closely comparable. It included 150 cases, likewise without fatality, and represented 6·9% of the total gas administrations for 1931-1936. Nitrous oxide was employed in 48 instances, ethylene in 95, and a gas unspecified in seven. One unsuccessful ethylene administration is included.

Respiratory Disease.

The group includes cases of empyema, bronchitis and pneumonia, of abscess or malignant disease of the lung, and of pulmonary tuberculosis, either frank or suspected because of tuberculous manifestations in other organs.

The corresponding group in the series of 1925-1931 included 137 cases with one fatality. The present series contained 184 cases, being 8·4% of the total gas administrations for 1931-1936. Two unsuccessful ethylene administrations are excluded. There was one death, due to hæmorrhage from the bronchial artery in a case of attempted lobectomy for malignant disease of the lung. The results are classified in Table VIII.

Table VIII.

Use of Gas Anæsthesia in Respiratory Disease, 1931-1936. Two unsuccessful ethylene administrations are omitted.

Gas.	Cases.	Deaths.	Percentage Mortality.
Nitrous oxide	68	1	(1·5)
Ethylene	104	0	0
Nitrous oxide + ethylene ..	2	0	0
Gas unspecified	10	0	0
Total	184	1	0·54

Primary Cardiac Disease.

Gas anæsthesia appears to be rarely chosen on account of cardiac disease *per se*. Abnormal hearts were probably not of rare occurrence, particularly in patients suffering from such conditions as prostatic hypertrophy. In such cases, however, other factors existed which led to the case being classified under other headings, for example, prevention of operative shock. In the series of 1925-1931, in only 18 instances was the choice of anæsthetic directly determined by the cardiac lesion, as

opposed to the nature of the operation *et cetera*. Of these 18 patients, one succumbed. In the series of 1931-1936 there were 36 such patients, representing 1·6% of the total gas administrations in that period. Twelve patients received nitrous oxide and twenty-four ethylene. There were no unsuccessful administrations and no fatalities.

Diabetes Mellitus.

The gaseous anæsthetics, producing no acidosis, are well adapted to surgery in diabetic subjects. Seventeen such patients were handled in the years 1925-1931 without fatality. In the present series there were 32 patients, or 1·5% of the total gas cases for 1931-1936. There was one death, that of a patient undergoing amputation for diabetic gangrene of the foot. The results are set out in Table IX.

TABLE IX.

Use of Gaseous Anæsthetics in Diabetic Subjects, 1931-1936, with Mortality in such Cases. There were no unsuccessful administrations.

Gas.	Cases.	Deaths.	Percentage Mortality.
Nitrous oxide	9	0	0
Ethylene	22	1	(4·5)
Gas unspecified	1	0	0
Total	32	1	(3·1)

Diathermy and Cautery.

Nitrous oxide, being non-inflammable unless mixed with ether vapour, is well suited to operations involving the use of the diathermy apparatus or actual cautery. As such it was employed only three times in the years 1925-1931 and seven times in the years 1931-1936, in all cases successfully and without fatality. These figures are, however, somewhat illusory. Very many cerebral operations have been performed in the hospital since about the year 1933. Since the use of the diathermy apparatus is essential in such cases, nitrous oxide has necessarily become the anæsthetic of choice for them. The character of the operations is such, however, that the use of nitrous oxide in cerebral surgery has been classified under the heading of prevention of operative shock, although it might equally logically be included in the present section.

"Good-Risk" Patients.

The group of "good-risk" patients is somewhat vague and includes, *inter alia*: (*a*) those subjected to short or minor operations, such as herniotomy, hæmorrhoidectomy or incision of small abscesses, gas anæsthesia being chosen, apparently in an attempt to mitigate after-sickness; (*b*) patients operated on by other than abdominal section who seemed healthy and for whom no direct indication for gas anæsthesia appeared to exist; (*c*) patients with non-toxic thyreoid disease; (*d*) young and healthy subjects subjected to simple removal of the breast or of a neoplasm of the breast, enfeebled patients subjected to radical mastectomy or simple mastectomy being classified under the heading of prevention of operative shock; (*e*) patients operated upon who had recently recovered from acute nephritis, but who were otherwise healthy, the object of gas anæsthesia being to spare the renal parenchyma from the toxic effect of ether or chloroform; (*f*) patients whose gaseous anæsthetic was chosen for the benefit of the anæsthetist's technique.

"Good-risk" patients, so defined, formed 11·7% of the total number of cases reported in 1925-1931. In the present series they formed 11·2%. As one might expect, when non-toxic anæsthetics were administered to healthy patients there were no fatalities. The results are set out in Table X.

TABLE X.

Gas Anæsthesia in "Good-Risk" Patients, 1931-1936. One unsuccessful nitrous oxide case is included.

Gas.	Total Cases.	"Good-Risk" Cases.	Percentage "Good Risks".
Nitrous oxide	638	91	14·3
Ethylene	1,460	139	9·5
Nitrous oxide + ethylene	7	1	—
Gas unspecified	78	13	(16·7)
Total	2,183	244	11·2

The relatively high incidence of nitrous oxide cases in this group is explained by the fact that the operations were not exacting from the anæsthetist's standpoint, that nitrous oxide is very agreeable to the patient and that it is cheaper than ethylene.

Endotracheal Gas Anæsthesia.

Endotracheal gas anæsthesia was in its infancy in our hospital at the time of the earlier report, being employed but 31 times (without fatality) in the years 1925-1931. Ethylene was at that time exclusively preferred, as being easier of administration and as offering a slightly longer period for the performance of laryngeal intubation.

In the years 1931-1936 endotracheal gas anæsthesia has been employed 112 times, representing 5·1% of the total gas administrations. The results may be tabulated as follows:

A. *Nitrous Oxide.* Forty-eight cases, with two deaths.

Classification.	Cases.	Deaths.
Prevention of shock	23	1
Respiratory disease	12	1
Cardiac disease	8	0
Miscellaneous, "good risks"	5	0
Total	48	2 (4·2%)

B. *Ethylene.* Sixty-three cases, with no fatality.

Classification.	Cases.
Prevention of shock	20
Respiratory disease	22
Cardiac disease	7
Diabetes mellitus	3
Sepsis	1
Miscellaneous, "good risks"	10
Total	63

C. *Gas Unspecified.* One successful case, for respiratory disease.

TABLE XI.

Deaths under Nitrous Oxide and Ethylene, 1931-1936.[1]

No.	Diagnosis and Attempted Operation.	Age.	Sex.	Anæsthetic Agent.	Clinical Condition.	Heart.	Urine.	Pulse.	Temperature.	Blood Pressure in Millimetres of Mercury.	Respiration	Died.	Inquest.	Autopsy Findings.	Comment.
1	Thyreoidectomy for exophthalmic goitre.	25	F.	Ethylene.	Very toxic.	Pulmonary second sound accentuated; pulmonary systolic bruit.	Clear.	138	36·9° C. (98·4° F.)	170/100	?	During operation.	+	Thymus large. Heart in fair order. Lungs congested and œdematous. Airways full of thick mucus. All other organs congested	Asphyxia by mucus secretion. Possibly preventible by intubation and aspiration of bronchial tree.
2	Acute pancreatitis; laparotomy.	43	F.	Ethylene.	Acutely ill.	Distant heart sounds	Acetone, trace albumin.	100	36·1° C. (97·0° F.)	90/60	32	During operation.	–	Heart dilated and flabby, else normal. Lungs congested, œdematous. Liver swollen, friable. Gallstones. Hæmorrhage and fat necrosis, pancreas and peritoneum.	Grave anæsthetic "risk".
3	Chronic ulceration of leg; nature of operation uncertain.	71	M.	Ethylene.	Asthma; cardiac irregularity	Further records missing.						During induction.	–	Pericardial effusion. Heart large, fibrous, dilated. Coronary calcification and sclerosis. Aortic atheroma. Kidneys granular. Lungs fibrous, congested.	Gross cardio-renal degeneration. A bad anæsthetic "risk".
4	Carcinoma common bile duct; cholecystduodenostomy and implantation of radium.	54	M.	Ethylene.	Intense jaundice.	No abnormal signs.	Clear.	92	36·5° C. (97·8° F.)	?	?	During closure of abdomen.	–	All viscera intensely icteric. Heart soft, else normal. Aortic atheroma. Lungs congested and œdematous. Liver swollen; septic cholangitis with abscesses. Carcinoma of bile duct.	A bad anæsthetic "risk".
5	Obstructed incisional hernia; operation for relief.	72	F.	Ethylene.	Had been obstructed for four days. Slight cyanosis.	No abnormal signs.	?	80	37·4° C. (99·4° F.)	130/90	24	During operation.	–	No record available.	Clinically, a grave anæsthetic "risk".
6	Volvulus of sigmoid colon; operation for relief.	47	F.	Ethylene.	Gravely ill. Lips cyanosed and pulse almost imperceptible.	No abnormal signs.	?	150	37·0° C. (98·6° F.)	?	40	During induction.	–	Heart normal. Aortic atheroma. Coronaries atheromatous but patent. Lungs congested. Liver swollen, friable. Large gut hugely dilated. Sigmoid volvulus. Pachymeningitis, with some internal hydrocephalus.	Grave anæsthetic "risk".

[1] Owing to the rapid elimination of the gaseous anæsthetics, it has been thought desirable to include only those fatalities which occurred in the operating theatre, or before the return of the patient to bed.

TABLE XI.—*Continued.*

Deaths under Nitrous Oxide and Ethylene, 1931-1936.[1]—Continued.

No.	Diagnosis and Attempted Operation.	Age.	Sex.	Anæsthetic Agent.	Clinical Condition.	Heart.	Urine.	Pulse.	Temperature.	Blood Pressure in Millimetres of Mercury.	Respiration.	Died.	Inquest.	Autopsy Findings.	Comment.
7	Carcinoma of larynx; removal of radium implant.	62	M.	Ethylene.	Enfeebled. Râles audible in lungs. Had received a long endotracheal ether anæsthetic one week previously.	Extrasystoles; mitral first sound reduplicated.	Clear.	120	37·9° C. (100·2° F.)	140	20	During induction.	—	Heart fibrous, dilated. Aortic atheroma. Emphysema, with patchy pulmonary collapse. Carcinoma pyriform fossa, with laryngeal œdema.	Asphyxial death. Anæsthetic risk enhanced by glottic œdema produced by radium.
8	Acute pancreatitis; choledochostomy.	70	F.	Ethylene.	Gravely ill.	Right heart enlarged; generalized diastolic bruit.	?	96	35·8° C. (96·4° F.)	122/90	24	During peritoneal closure.	—	Heart large, fibrous, dilated. Valves calcareous. Coronics calcified, almost occluded. Gross aortic atheroma. Pleural adhesions; lungs œdematous. Liver fibrous; acute pancreatitis. Kidneys large, soft.	Grave anæsthetic "risk".
9	Diabetic gangrene of foot; amputation.	56	F.	Ethylene.	Toxic.	No abnormal signs.	Sugar, albumin, acetone.	112	38·5° C. (101·4° F.)	170/100	26	At end of operation.	—	Coronary sclerosis. Bilateral hydrothorax; basal collapse of lungs. Pancreas fatty, degenerate. Kidneys large, sub-granular. Old liver hydatid.	Very poor anæsthetic "risk".
10	Exploration, (?) fat necrosis, following cholecystectomy.	52	F.	Ethylene.	Diabetic. Cholecystectomy on previous day, under local anæsthesia.	Right heart enlarged; else no abnormal signs.	Sugar.	80	36·7° C. (98·0° F.)	?	24	On way back to bed.	—	Occlusion of branch of left pulmonary artery, with infarction. No pancreatitis.	Abdominal symptoms apparently due to pulmonary embolism. Very grave anæsthetic "risk".
11	Bronchogenic carcinoma of lung; lobectomy.	39	F.	Nitrous oxide.	A previous attempt at lobectomy had been defeated by hæmorrhage.	Record incomplete, but apparently no gross clinical lesion existed.		84	36·9° C. (98·4° F.)	?	20	During operation.	—	Heart normal. A pint of free blood in right thoracic cavity. Right lower lobe excised. Tumour tissue found in stump of right bronchus. Areas of collapse in left lung. Other organs normal.	Death due to hæmorrhage from stump of bronchial artery.
12	Internal hydrocephalus. Cerebral exploration.	5	F.	Nitrous oxide.	High cerebral tension. Papilloedema and choroiditis. Had received a short ether anæsthetic for ventriculography three days before.	No abnormal signs.	?	72	36·8° C. (98·2° F.)	80	24	During operation, whilst opening *dura mater*.	—	Ependymitis around Sylvian aqueduct. Third ventricle dilated. Hydrocephalus. No tumour seen. Other organs normal.	Death from sudden cardiac failure. A poor anæsthetic "risk".

[1] Owing to the rapid elimination of the gaseous anæsthetics, it has been thought desirable to include only those fatalities which occurred in the operating theatre, or before the return of the patient to bed.

The series, then, includes 112 cases, one administration being abandoned on account of uneconomic wastage of gas. There were two fatalities, or 1·7% of the 112 cases. One of these was the case of fatal hæmorrhage from the bronchial artery mentioned above under the heading of "respiratory disease". The other death occurred as a result of sudden medullary failure during a cerebral exploratory operation upon a child suffering from ependymitis of the aqueduct of Sylvius.

Part II. Details of Anæsthetic Fatalities.

It has been pointed out that the gross mortality under gaseous anæsthetics "on the table" has fallen in our hospital from 8·3‰ administrations in 1925-1931 to 5·5‰ in 1931-1936. It was further pointed out that this mortality is considerably in excess of the mortality under ether anæsthesia (0·7‰ in 1929-1934). Ether, however, is administered only to apparently robust patients, whilst probably 50% of the gas administrations were to patients who were ranked as "C" or "D" class risks. It is necessary, therefore, that we review the clinical and pathological findings in those patients who actually died under gas anæsthesia in the years 1931-1936, with special reference to any possibility which may have existed of preventing a fatal issue. Only in this way can we decide whether the gas anæsthetic mortality in our hospital in the years 1931-1936 has been of reasonable proportions.

Full details of the twelve fatal cases are set out in Table XI. Consideration of this table brings out the following points:

1. All the patients were grave "anæsthetic risks".

2. One death (Number 1 in Table XI) was due to asphyxiation by secretion of mucus from the trachea during thyreoidectomy. This eventuality is not uncommon, being provoked by surgical manipulation of the trachea. A thyreotoxic heart is very likely to succumb to the resulting anoxæmia. It is possible that life might have been saved in this instance had the larynx been intubated, the bronchial tree aspirated, and anæsthesia continued by the endotracheal technique. The use of gas-anæsthetic apparatus capable of delivery of gas under positive pressure is very desirable in thyreoid surgery, so that one may be able to combat respiratory embarrassment due to mucus secretion, to tracheal collapse or to injury to the recurrent laryngeal nerves. Even so, the possibility of having to adopt endotracheal technique in order to overcome obstruction must always be visualized.

3. A further fatality (Number 7 in Table XI) might perhaps have been averted had positive pressure anæsthetic apparatus been available. The patient, who suffered from œdema of the glottis, became asphyxiated in the induction stage and rapidly succumbed to secondary cardiac failure. Intubation of the larynx and insufflation of oxygen at this stage failed to restore life. A fatal issue might have been avoided had it been possible to supply the ethylene-oxygen mixture at a pressure sufficient to overcome the obstruction at the first appearance of respiratory embarrassment.

4. The remaining ten patients were all grave anæsthetic "risks" and suffered from serious pathological lesions, which may be briefly summarized thus:

Acute pancreatitis	2
Cardio-renal degeneration	1
Carcinoma of common bile duct	1
Obstructed hernia	1
Volvulus of sigmoid colon	1
Diabetic gangrene	1
Pulmonary embolism	1
Hæmorrhage from bronchial artery	1
Medullary failure in hydrocephalus	1
Total	10

5. In view of these circumstances, the gas anæsthetic mortality of 5·5‰ administrations in 1931-1936 is not unreasonably high.

Acknowledgement.

The writer desires to thank the Registrar-General of the State of Victoria for permission to use the official archives, and the officers of his department and of the City Coroner's Court for assistance in obtaining data.

Reviews.

TUBERCULOSIS.

"This work presents in correlated form the entire subject of clinical tuberculosis. Encyclopedic in scope, the unity of the text material is definitely enhanced by the inclusion of chapters by specialists in every branch of medicine and surgery." With this not unduly modest preamble, the editor, Dr. Benjamin Goldberg, opens his preface to his ambitious two-volume compilation on "Clinical Tuberculosis".[1]

Thirty-four American authors (twenty of them from Chicago) contribute to the 1,500 odd pages, and the result is a reference work of considerable value. To place it in the category of an encyclopædia is, however, another matter. It can fairly be considered as a collection of papers on most aspects of tuberculous disease in mankind, but it definitely fails in its "scope". In justification of this criticism, some striking omissions may be cited. Addison's disease does not appear (though "tuberculosis of the thyroid gland" takes up 12 pages). Again, we have failed to find any mention of tuberculous tonsillitis, an important subject for discussion.

In a chapter on industrial hazards in relation to pulmonary tuberculosis, no mention is made of the most important hazard of all, namely silica dust. There is evidence that many of the papers have not been read by writers on correlated subjects, the result being a certain amount of redundancy. More serious objection, however, must be taken to the lack of balance in the various papers. In some, the editorial blue pencil is needed; others are not thorough and give an inadequate description of their subject.

Tuberculous meningitis is allowed 40 pages, while tuberculosis of the pleura, a far more important "clinical" subject from a practical point of view, occupies only 22 (and treatment is scampered through in a bare 20 lines).

[1] "Clinical Tuberculosis", by various authors; edited by B. Goldberg, M.D., F.A.C.P., F.A.P.H.A.; Volumes I and II; 1936. Philadelphia: F. A. Davis Company. Super royal 8vo, fully illustrated with over 640 half-tone and line engravings and nine full-page colour plates. Price: $22.00 net.

Diet is outlined in 12 pages, but the special salt-restricted diet is discussed in great detail for 20 pages. Climatotherapy is dismissed in seven pages, with no mention of any country except the United States of America; heliotherapy is allowed 43 pages. No less than 70 pages are allotted to tuberculosis of the ear, nose and throat, and 62 to skin. Twenty-four pages suffice for the urogenital tract, just two pages more than are required for "anorectal tuberculosis". (Perhaps there will be some pruning and grafting in the next edition.)

There are some excellent papers by recognized masters of their subject. The philosophical opening essay by Drolet on epidemiology is a calm and judicial survey of a contentious subject which will be closely read by all who are interested in this important problem.

The chapters on collapse therapy in pulmonary tuberculosis are all especially good. They are written from the field of wide experience and are up to date. But in this field advances are being constantly made, and there is no doubt that close revision will be required from time to time. Individual mention can be made of those on artificial pneumothorax and intrapleural pneumolysis by Ralph C. Matson, on apical thoracoplasty by Coryllos, and on total thoracoplasty by Hedblom.

Some papers are interesting in dealing with the subject from an unusual angle. "Pathologic Physiology of the Tuberculous Lung", by Coryllos, in 45 pages is distinctly stimulating. So also is "Classification of Pulmonary Tuberculosis", in 80 pages, by Ornstein and Ulmar. This chapter is complete with its own diagnosis, prognosis and treatment, though all these receive later chapters to themselves. The classification of these authors is rather novel, and there is much with which we cannot agree in their account. They postulate "the goal of therapy—a negative sputum" and let the idea run away with them. This is a most important aim, but it can never be accepted as the sole criterion of cure, as they pretend. Incidentally, they make much of the Gaffky count, but nowhere in the book can we find what a Gaffky count is.

Ornstein and Ulmar affect a florid style, as do some others, with a wordiness which makes reading tiresome and often renders the meaning ambiguous. "A caseous pneumonic pathology distributed bilaterally" is a cumbersome phrase, to put it mildly, and "a long drawn out affair in the pleura" could be translated with advantage into English as "a persistent pleural effusion". "A marked disparity of conviction" for "a difference of opinion", "the unwavering stability of a positive sputum" for a "constantly positive sputum", are other examples, and many more could be quoted.

The authors just mentioned are also responsible for a tedious chapter on physical diagnosis. They expound at great length an ingenious theory on the physics of breath sounds, which is no doubt correct. But is it in place in a work on tuberculosis, where breath sounds matter so little as compared with X ray evidence? They also enthuse over "the fascination of correlating findings on physical examination with the underlying pathology". With deference, we submit that this is rather a sterile academic exercise, radiology proving that the chance of the examiner being correct is slight indeed. Strangely enough, the authors then insist that the history allows recognition of the diagnosis more often than the physical examination; but here they are right.

Pathology is well described by Jaffé, and the illustrations, notably the coloured photographs, are excellent.

"Laboratory Diagnosis", by Koch and Mellon, is a rather brief chapter. There is an inadequate note on the sedimentation test, and no mention is made of blood counts, such as the differential count of Medlar and the Armeth count.

"Prognosis in Pulmonary Tuberculosis", by Goldberg and Alarcon, is not well done. The authors are far too vague, and often leave the reader in the air. Also they betray carelessness: "Such conditions as spontaneous pneumothorax and miliary tuberculosis are known to have an almost invariably fatal termination." The prognosis in these two conditions, of course, differs widely. Nor is there any special merit in the chapter on medicinal, symptomatic and tuberculin therapy. It occupies only seventeen pages and gives little more than is to be found in any student's text-book. Gold therapy is barely mentioned, the author merely permitting himself to "withhold any recommendation for the use of this substance" ("Sanocrysin"). The newer oily solutions of gold salts appear not to have arrived yet in the United States of America. A noticeable omission in the treatment of hæmoptysis is the intravenous injection of 1% Congo red solution, a recently revived treatment of definite value.

A chapter on tuberculosis in childhood gives an excellent summary of this important aspect of the problem. The lucid subdivision and completeness of the references to this section deserve mention.

Most of the remaining sections deal with tuberculosis in the various systems of the body: intestinal, genito-urinary, skin, bone and joint, and so forth. They are mostly too brief to be of great value to those who specialize therein, but as sources of reference to the expert in pulmonary tuberculosis they are of considerable merit.

The last chapter, on psychopathology, is one of the weakest. The author notes the psychological peculiarity of the tuberculous, but he then attempts to run the gamut with a series of subsections so numerous as to bewilder the reader on "mentally defectives", extroversion and introversion, toxic psychoses, lunacy and the like; finally he plunges into organic nervous disease, with notes on meningitis, tuberculomata and neuritis. All this in sixteen pages is rather too much to digest. However, the reader may thereby be stimulated to browse further in this rather fascinating field of medicine, with profit to himself and his patient.

The general format of the book is deserving of high praise. Variation in print and frequent use of headings encourage the reader to open at any page and to commence reading immediately. The illustrations are profuse and in the main excellent, radiographic reproductions maintaining an extremely high standard throughout. References are copious, especially those accompanying some of the chapters on newer surgical treatment in pulmonary tuberculosis; Coryllos on apical collapse, for instance, offers nearly 400. Those who are especially interested in tuberculosis, and who can afford it, will place Goldberg's two volumes on their shelves. It is likely in the future to become a standard reference work on this subject in the English language.

A MANUAL OF OBSTETRICS.

TEXT-BOOKS on obstetrics continue to appear at comparatively short intervals, and among the most recent is a "Manual of Practical Obstetrics", by Dr. O'Donel Browne, of the Rotunda Hospital.[1] The book is written chiefly for the student and general practitioner, and the author points out that such views as differ from those of other writers on the subject express his experience gained both in actual practice and while teaching students and post-graduates. We have thus a text which clearly represents first-hand knowledge, practical in outlook and with adequate theoretical consideration. The work is evidence of the fact that while the principles which govern obstetrics remain fairly constant, their application varies, and while there is a *rapprochement* among obstetricians—a conservative tendency—standardization of methods, or a common school, has not yet been achieved. This is emphasized in various sections, such as those on breech presentations, *ante partum* hæmorrhages and eclampsia. The chapter on the management of normal labour is written with helpful details not usually found in similar text-books, a valuable clinical teaching for students and practical to a degree.

Anæsthesia in labour has a section to itself; the advantages and disadvantages of the various drugs are discussed. Basal anæsthesia is not favoured, and the author is opposed to sacral and caudal block by infiltration of the nerve roots of the perineal region. He favours

[1] "A Manual of Practical Obstetrics", by O'D. Browne, M.B., B.Ch., B.A.O., F.R.C.P.I., L.M., M.C.O.G.; 1936. Bristol: John Wright and Sons Limited. Royal 8vo, pp. 363, with 236 illustrations and 10 plates. Price: 20s. net.

the self-administration of chloroform from small ampoules. On the question of the conduct of labour in occipito-posterior positions Dr. Browne is very definite. No effort is made, "as in other countries", to change by manipulation the position to occipito-anterior. Delivery is completed by forceps if necessary, as if the head was occipito-anterior; he regards premature interference with a persistent occipito-posterior head as "mistaken humanitarianism", adopting a masterly inactivity, which here, as elsewhere, he opposes to meddlesome midwifery.

Conservative measures are favoured in accidental hæmorrhage, Cæsarean section being advised only when arrest of hæmorrhage has not followed puncture of the membranes with ephedrine injections and plugging of the vagina. On the other hand, the author is of the opinion that Cæsarean section must be considered in every *primigravida* with *placenta prævia*. He does not favour Willet's forceps or de Ribes's bag. Cæsarean section should be specially considered with central *placenta prævia* in the elderly *primigravida* or *multipara* with the child alive and viable.

The toxæmias of pregnancy receive due attention. Dr. Browne claims for the Dublin teaching the best explanation to date, and its general acceptance. He gives in detail the treatment of eclampsia as practised at the Rotunda, that is, starvation or Tweedy's method, with the additional exhibition of salt and glucose, which was not part of Tweedy's original method. While he is satisfied with this method, the author gives due credit to Stroganoff's excellent results. The treatment of contracted pelvis is given with commendable conciseness; it embodies the teachings of Tweedy and the instructions formulated by Fitz-Gibbon in "Trial of Labour". Twenty pages are devoted to obstetric operations, which include jejunostomy as an emergency measure in the treatment of severe *hyperemesis gravidarum*, and a form of circumcision—the dorsal-slit method—calling for no stitching or removal of any part. There are informative and well-written chapters on "The Infant" (Dr. R. F. Collis), "Radiology in Obstetrics, including X-Ray Pelvimetry and Encephalometry" (Dr. C. M. McDonagh), and "Blood-Typing" (Dr. G. C. Dockeray). The book is well abreast of obstetrical knowledge; it includes the Aschheim-Zondek and Friedman tests for pregnancy, and there is a description of the technique of the Van den Bergh test for the recognition of jaundice in the pre-icteric stage. Dr. Browne has written an up-to-date treatise, well illustrated and of attractive appearance. To the student it will appeal by its teaching quality, homiletic at times and the more impressive therefor. To the general practitioner it should be a very present help in time of difficulty.

THE EARLY DIAGNOSIS OF CANCER.

"The Early Diagnosis of Malignant Disease", a little monograph of 68 pages and an index, is yet another of the useful pocket-books issued under the general editorship of Arnold and Maurice Sorsby.[1] Written by Dr. Geoffrey Keynes for the senior student and general practitioner, it fills a want. The layout of the subject matter is included under headings of the organs involved and is preceded by a commonsense introduction, in which stress is laid upon the importance of avoiding reference to the hopelessness of cancer. The author points out that it is the aim of this book to teach the significance of the earliest reliable signs and symptoms which should excite the suspicion of the existence of malignancy.

He states that: "Morally the same [that is, possible action for damages for carelessness] should apply to any medical man who ignores a clinical sign of malignant disease and thereby deprives a patient of the chance of cure." With this we agree. There can be no doubt that in the present state of knowledge the solution of the so-called cancer problem is largely a matter of early diagnosis and prompt and effective treatment, together with prevention of the many preventible forms of cancer. Dr. Keynes, drawing upon his extensive experience, deals really skilfully with the first phase. Tribute is paid to the assistance afforded by diagnostic radiology, and stress is laid on the significance in some families of an hereditary tendency to the disease.

Cancer of the breast is particularly well dealt with, and the importance of chronic mastitis as a precancerous state is stressed. The chapter on cancer of the rectum is full of valuable information. In fact the whole book is full of "meat" and shows an absence of the padding so frequently seen in good text-books.

To workers in Australia the chapter dealing with carcinoma of the skin (under which heading rodent ulcer should not strictly speaking be described) is rather sketchy and incomplete. The chapter on carcinoma of the stomach is well done and contains the only diagrams (line drawings of skiagrams) in the book.

Dr. Keynes is to be congratulated upon crowding into such a small compass a mass of useful information regarding the really early symptoms and signs of cancer. This little book should be read by every general practitioner. It is a clearly readable, informative, and accurate presentation of a difficult but extraordinarily important aspect of cancer work.

WOMAN AND SEX.

"The Woman Asks the Doctor", by Dr. Emil Novak, consists of 191 pages of what the author states are answers to questions actually asked by his patients.[1] Without this assurance we should have thought that patients with such keen curiosity and knowledge would have existed only as members of an embryology class. Some chapters are elementary and, to the graduate, commonplace, namely: "What is Femaleness?" "Reproduction Apparatus", "Glands", "Menstruation" and "Change of Life", whilst others entitled "Folk Lore of Menstruation", "Woman as an Egg Producer" and "Sterility in Woman" are refreshing assets to a medical bookshelf.

"The Sex Life of Woman" is handled lucidly and delicately in ten pages. It should be read by every husband.

Of what he considers "a rather messy and sordid business" Novak writes: "In cases of male sterility—and these furnish the chief excuse for artificial insemination—there is no doubt that the method is of at least some value, for without it the chances of a woman are nil unless she sacrifices her marriage vows . . ."

A POCKET MONOGRAPH ON FRACTURES.

In the "Treatment of Fractures in General Practice" ("Pocket-Monographs on Practical Medicine") the author, W. H. Ogilvie, has been asked to write down the whole of the modern treatment of fractures in 288 small pages.[2] The result is that the book is a summary. It is a very good summary, very clearly and concisely written, and the advice given is always sound. Nevertheless it has the fault of all summaries, that there is not enough detail on any particular fracture. When the general practitioner wishes to consult a text-book on fractures, it is because he is in difficulties with one particular type of fracture, and in these circumstances he requires most minute detail. Therefore he would be better advised, if he wants a text-book, to purchase a large one, such as Böhler's own book. The senior student who wishes to have his knowledge put in well-defined and summarized form for examination purposes may possibly find this a useful book.

[1] "Pocket Monographs on Practical Medicine: The Early Diagnosis of Malignant Disease", by G. Keynes, M.A., M.D., F.R.C.S.; 1935. London: John Bale, Sons and Danielsson, Limited. Foolscap 8vo, pp. 70, with illustrations. Price: 2s. 6d. net.

[1] "The Woman Asks the Doctor", by E. Novak, M.D., D.Sc., illustrated by C. Clarke; 1936. London: Christophers. Demy 8vo, pp. 203, with illustrations. Price: 5s. net.

[2] "Pocket-Monographs on Practical Medicine: Treatment of Fractures in General Practice", by W. H. Ogilvie, M.D., M.Ch., F.R.C.S.; Volumes I and II; Second Edition; 1936. London: John Bale, Sons and Danielsson, Limited. Foolscap 8vo, pp. 188, with illustrations. Price: 2s. 6d. each volume.

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ORTHOPTIC TRAINING.

Operative measures are not always necessary in the treatment of squint; nor when they are necessary are they always alone effective. There is all the difference in the world between a good cosmetic result and the establishment of binocular vision, which is a functional cure. Dr. T. A'B. Travers, of Melbourne, showed in a paper published not so long ago in *The Australian and New Zealand Journal of Surgery* that the two main obstacles to the attainment of a functional cure were amblyopia and abnormal retinal correspondence. Dr. Travers's paper demonstrates how these factors must be considered in the prognosis of all cases of squint. Even if surgical operation is successful in making the eyes perfectly straight, scar tissue may form and relapse occur. Fusion training, more popularly known as orthoptic training, has become an integral part of the treatment of many cases of squint. There is, however, among both medical practitioners and the laity a good deal of misconception of its scope and limitations.

The chief instruments used in orthoptic training are the synoptophore, the orthoptoscope, the stereoscope and the cheiroscope. The first two of these instruments are really adapted from Worth's amblyoscope. In *The British Medical Journal* of August 19, 1933, and August 11, 1934, accounts are given of discussions on this subject by Miss M. A. Pugh at annual meetings of the Association. Miss Pugh pointed out that at least nine months were required for the production of a stable result, but that the results were well worth the time and trouble spent. The degree of squint was, in her opinion, a great factor in the prognosis. Convergent strabismus of 15° or under carried a favourable prognosis. In roughly 77% of cases stereoscopic vision resulted from six months' treatment and the patient's eyes were straight. In convergent concomitant strabismus of over 15° the training took much longer, and in some cases it was advisable when fusion had developed that the eye should be put as straight as possible by operation and that the training should be continued for some time afterwards. A favourable prognosis might, she thought, be given in divergent strabismus of up to 20°, a successful result being achieved in six months or under in 90% of cases. Dr. Travers reported the results obtained in 131 cases and he showed how much the end result was influenced by the presence of abnormal retinal correspondence. He also declared that one of the functions of an orthoptic clinic was diagnostic, because without some machine, such as the synoptophore, abnormal retinal correspondence could not be diagnosed with certainty.

Orthoptic training is an exceedingly tedious procedure; it calls for great tact and patience. It also takes more time than most ophthalmic surgeons are able or willing to give to it. Even if they were able to do the work, the fees charged, for example, for treatment of a restless child for half an hour three or four times a week for months on end, would be beyond the means of most people. It must be admitted that the best results will be obtained by a trained kindergartener working under the general supervision of an ophthalmologist. Of

course the kindergartener must be trained, and her training should be given by an experienced ophthalmic surgeon. In Great Britain orthoptic trainers are controlled by the British Orthoptic Council; they are required to pass an examination and to give an undertaking that they will abide by the ethical rules drawn up by the Council. They undertake to work only under the direction of fully qualified ophthalmic surgeons; they agree not to prescribe glasses, not to advertise, not to employ secret treatment, and not to train students who do not undertake to conform to the regulations of the Orthoptic Council. The scope for work of this kind in Australia is not very great. Whether the time is ripe for the establishment of an Australian Orthoptic Council is open to argument. The question might well be discussed by the ophthalmic surgeons of the Commonwealth.

Current Comment.

AN ANCIENT MEDICAL WRITER.

In the fourteenth and fifteenth centuries the family of Mirfeld (or Mirfield), which took its name from the neighbouring town of Mirfield, was an important and powerful one in the West Riding of Yorkshire. The family owned lands in the neighbourhood, had intermarried with other prominent landed gentry, and possessed a private chapel in Batley Church. A cadet of this house, William de Mirfeld, took Holy Orders, but later sought secular honours in the service of the king. In the course of years he rose to the position of "Great Clerk", an appointment equivalent to the modern one of Under-Secretaryship of State, and was later Chief Attorney to John of Gaunt, Duke of Lancaster. This capable courtier-cleric had a younger kinsman, Johannes de Mirfeld, with whom and whose writings the present commentary is concerned. His importance lies in the fact that he was the first man connected with Saint Bartholomew's Hospital to write anything of medical importance.

We cannot be certain whether Johannes de Mirfeld was born in Yorkshire or in London, but it is certain that he was in London as a young man. There, perhaps through the influence of his influential relative, William, he made the acquaintance of Adam Rous, surgeon to Edward III. Further, through the same influence, he became *Dominus et Capellanus*—an unbeneficed priest—and lived within the walls of the Priory of Saint Bartholomew, which adjoined and was closely connected with the hospital of the same name. Johannes was a man of probity, with a good head for business. He was liked and trusted by his friends and acted in a fiduciary capacity for several of them. Within the peaceful priory, and stimulated, it is likely, by the nearby hospital, he conceived a liking for medicine and wrote two books, one bearing wholly and the other partially upon that branch of learning. The first of these was the *Breviarium Bartholomei*, a purely medical treatise which came from Mirfeld's pen in the years 1380-1395. The second work was the *Florarium Bartholomei*, which, except for one chapter on "Doctors and their Remedies", is wholly theological in tone. It seems to have first seen the light about the year 1404. Both books, be it said, were intended by their author for general as well as professional study. This kindly priest then sought to do his loving duty to his fellows by compiling for their benefit such knowledge as would be likely to cure both their bodily and spiritual ailments; the whole body of his writing (and this applies especially to his medical writing) is a collection of the wisdom given to the world by learned men who preceded him.

Before he published the *Breviarium* Mirfeld had already attracted notice by his *Sinonoma* or "Glossary of Terms", but his *Breviarium* brought him fame as being the first medical work associated with Saint Bartholomew's Hospital, and as a fair representation of the state of medical practice in the days of Chaucer, Wycliffe and the Black Prince, of the times when Wat Tyler, after a heady altercation with young Richard II, was borne into the hospital to die. Yet the book contains nothing to be construed as meaning that Mirfeld himself was a doctor; he was a compiler and was well content to be so described. Nor was he, as some have alleged, a canon of the Augustinian Priory of Saint Bartholomew. From available documents it is likely that, though a priest, he was a resident stranger within its walls and was in receipt of a salary for services performed up to the time of his death early in 1407. Johannes was reported to have been educated at Oxford, but nobody of his name is recorded as having attended the university until he had been dead for half a century. Throughout the *Breviarium* Mirfeld constantly uses the term "my master", words which have been taken to mean that he had been under the tutelage of a physician. But Mirfeld himself makes no such claim, and in all cases in which he uses the phrase it can be shown that he quotes, sometimes *verbatim*, from mediæval text-books. In one notable instance Mirfeld quotes the treatment by "my master" of a canon who was thrown from an unruly horse. Sir Norman Moore has said that the cleric in question was an Augustinian canon of the priory. The fact is, however, that the whole transaction is lifted word for word from a famous surgical text-book, the *Cirurgia Magna* of Lanfranc, of Milan. Our Johannes, transcribing the passage, changed Lanfranc's "as I did" into "as my master did", and

omitted entirely the words "of the city of Milan", the address of Lanfranc's canon. And since Mirfeld died a century later than Lanfranc, he could not have been the latter's pupil.

This wholesale copying is found throughout the strictly medical sections of the *Breviarium*. In the section on consumption de Mirfeld tells how many doctors are led into error in making the diagnosis of pulmonary tuberculosis. "My master" was too wise to make such mistakes. "The following is the test my master used to apply: He made his patient open his mouth and exhale; if he perceived the sick man's breath to be foul and strongly fœtid, whereas this had not been the case when the patient was in good health, my master pronounced him to be suffering from phthisis and incurable." The passage is a *verbatim* transcription from a book of Johannes Platearius the Younger of Salerno (*circa* 1100). Mirfeld has changed the original words of the text, "my father", that is, Platearius the Elder, into "my master". From this point onwards Mirfeld's text is made up of quotations, often literal, from the writings of Bernardus de Gordonio (the Bernard of Chaucer's Prologue), which themselves derive directly from the works of Hippocrates, Galen and Avicenna. Today all this would be condemned as so much literary cribbing; but the essence of mediæval medicine was its veneration for tradition and its blind acceptance of the theories and opinions, unsupported often enough by experiment or observation, of the ancient masters. We need feel no surprise, therefore, that the *Breviarium* is nothing more than a typical mediæval text-book containing much that is elementary and foolish in the light of our knowledge—a hotchpotch of the writings of Aristotle, Hippocrates, Galen, Rhazes, Isaac ben Solomon, Avicenna, the scholars of Salerno and Montpellier, and many another bygone magnifico. Nothing in Mirfeld's book could arm a doctor of his day against the black death or the sweating sickness. Yet his manuscript is of priceless worth to students as showing the manner of treating patients in Saint Bartholomew's Hospital five hundred years ago.

The *Breviarium* is an immense work. Essentially it is a bibliography of the entire medical literature of the middle ages. Published today, its contents would occupy 2,500 pages of the same size as those between the covers of an ordinary novel. In consequence the learned collaborators of the book which now concerns us[1] have had to content themselves with extracts, placing the original monastic Latin text and its English translation upon opposing pages. Of the complete manuscript there are two copies, one in the British Museum and a second and better in the library of Pembroke College, Oxford. This latter includes the *Sinonoma*, already mentioned, and an astronomical calendar. The work contains, first, a lengthy preface, notable for its pious tenor; then follows the *De Signis Malis*—an account of the signs of evil portent appearing in feverish and other patients. "If the hand of the patient be rubbed with yeast", we read, "and this be offered to a dog, if the dog eats it, then will the patient be restored to health; if not, he will die." Further, it is the worst possible sign for the right eye of a sick man to shed tears; conversely, any ailing woman who weeps from her left eye may at once dismiss her doctor and send hurriedly for her kinsfolk and a priest. Next in order comes the chapter on phthisis (*De Ptisi*), which is of great interest to a modern physician. One observation to be noted is that milk is of great value to sufferers from tuberculosis—women's milk for choice, and that of asses and goats in second and third places respectively. In all cases the milk should preferably be delivered "straight from producer to consumer"—straight from udder to mouth. It is difficult to picture a donkey or a goat performing this duty in a consumptive's sick-room. The *Breviarium* ends with instructions about the correct use of weights and measures, for the preparation of *Emplastrum Bartholomei* and that of *Pulvis pro instrumento bellico*, which is to say gunpowder.

The *Florarium Bartholomei* is mainly theological in content, but, as already noted, includes one chapter of medical interest. It consists of a prologue, an epilogue and 175 chapters. The original manuscript has perished, but two copies of it survive, one in the library of Gray's Inn and one in the British Museum. Both bristle with misquotations and blundering corruptions of standard books of the time. Mirfeld seems originally to have kept the authorship a close secret, but his manuscript contains that tell-tale clue, an acrostic. This was solved by Horwood in 1869 while making a catalogue of manuscripts in the library of Gray's Inn. The *Florarium* may be considered as a guide to spiritual well-being, just as the *Breviarium* is a *vade mecum* to physical health. Here again we read a compendium—a collection of edifying tracts upon the cardinal virtues and vices, embellished with pertinent anecdotes. There was, for instance, the grasping physician, who, when dying, could not forget the patient who for three long years had owed him £13. The attending priest tried to perform his office, but the semi-conscious patient could only mutter: "Thirteen pounds, thirteen pounds, thirt . . ."

The medical chapter of the *Florarium* contains instructions for maintaining health, and is reading of the best. The advice on physical exercise, indeed, might have been written yesterday. It, like the other sections, is copied almost word for word from authorities of repute. Yet much of the advice it gives is none the worse for that. "Let him [the physician] with diligence attend the poor, as is fitting." Again: "It is not seemly for the physician to converse in secret with any women of the patient's household, except it be in connexion with his treatment; nor is it consistent with his profes-

[1] "Johannes de Mirfeld of St. Bartholomew's, Smithfield: His Life and Works", by P. Horton-Smith Hartley, C.V.O., M.A., M.D., F.R.C.P., and H. R. Aldridge, M.A.; 1936. Cambridge: The University Press; Melbourne: Samuel Jaboor. Demy 8vo, pp. 204. Price: 15s. net.

sional dignity that he should speak shamefully to them or turn bold glances upon them, and particularly when in the presence of the patient . . ." And so the good priest ends his *Florarium* with a prayer of thanksgiving for the divine help granted his labours and with suitable quotations from Ecclesiastes, Romans and the Psalms.

What can we say in thanks to the two scholars, Sir Percival Horton-Smith Hartley, who is a consulting physician to Saint Bartholomew's Hospital, and to Mr. H. R. Aldridge, assistant keeper in the Department of Manuscripts in the British Museum? They have presented us with a beautiful book, a task involving immense erudition and the labour of years. If it be true, as somebody says, that a scholar is a man who reads Plato in the original with his feet on the mantelpiece, then, in a wider sense, these two are scholars in everything but the fact that their work could not have permitted them to adopt so comfortable a position.

CONGENITAL LUNG CYSTS.

Bartholin in 1687 described a cystic lung. Such a condition has been considered to be uncommon and varying opinions have been expressed as to its pathogenesis. In 1925 A. R. Koontz collected the records of 108 cases of congenital cystic lungs, including many of congenital bronchiectasis. All of these were disclosed at autopsy. A case of congenital bronchiectasis was described by Koontz as occurring in a twelve-day-old infant. Sydney Smith described an instance occurring in an eight-months fœtus in which the cysts were not in communication with the bronchi. In 1927 P. Kerley reported an instance of fibrocystic disease which proved fatal. From X ray findings the diagnosis lay between bronchiectasis and *lymphangitis carcinomatosa*. Autopsy showed the lung to contain many cysts. Kerley considered the condition to be congenital and analogous to congenital cystic kidney. A further opinion was offered that the condition was inflammatory and resembled cystic disease of the breast supervening on chronic mastitis. In 1935 A. Argyll Robertson reported a fatal case in an infant of ten months. This was one of congenital bronchiectasis. The cysts communicated with the bronchi, and bronchial tissue was demonstrated in the cyst walls; acquired bronchiectasis was excluded. Argyll Robertson stated that the term congenital cystic lung was used to embrace occlusion cysts having no communication with the bronchi and cases of congenital bronchiectasis, the dilated bronchi appearing as cysts.

J. D. Adamson has made a study of 100 cases—51 from the article by Koontz and 49 since reported, including four described in the text.[1] The pure aplasias, anatomical anomalies and diverticula are not included in this study, as they are not clinically in the same category. W. E. Anspach and I. J. Wolman have classified cysts according to whether they contain fluid or air and also whether or not they communicate with the bronchial tree. Adamson does not favour this subdivision. He considers that when the cyst is filled with secretion it does not communicate freely with the bronchial tree, and that it does communicate when it contains air. It is doubtful whether any lung cavity could contain air or gas if it did not communicate with the air passages. Further, it is almost impossible sometimes to determine the presence or absence of communication even at autopsy. The only reasonable clinical criterion of communication is the presence of air. Accordingly cysts may be divided into those which contain air and those with fluid. The cysts vary enormously in number, and in size they may be microscopical or so large as to cause death by encroachment on lung tissue. In about one-third of the cases the cysts are solitary.

Adamson states that there is general agreement that pulmonary cysts are due to congenital defects. They are seen in premature infants and in the newborn. They may be associated with other congenital anomalies. The cysts are common in anomalous and supernumerary lobes and lungs. The cyst cells are unpigmented—an indication that they have arisen from tissues that have not functioned as normal lung tissue. Cysts filled with mucoid secretion have been explained on the assumption that, during early development, one or more buds of the developing trachea are nipped off and develop autonomously. Not being connected with the bronchial tree, the secretions accumulate and form cysts, which may attain great size and compress one or both lungs. Another source of such cysts may be atresia of a bronchus in intrauterine life. Thus part of a lung might be isolated from the air spaces. It is not likely, however, that this could occur to any great extent, as it has been shown by Macklin that the alveoli are not isolated units, but communicate freely with each other by vents, pores or fenestræ. Owing to these vents, anything short of a lobar atresia could not effect isolation. Most cysts contain air and many obviously communicate with the bronchial tree. Some of them may arise by accidental detachment and isolation of buds of the developing lung. Later they break into the bronchial tree, discharge their mucoid contents and become filled with air. Adamson considers that a likely explanation for air-containing cysts is that they result from a failure in the development of the alveolar part of the lung. This growth normally does not occur until the third trimester of intrauterine life. Seemingly such failure is not uncommon. In such event the atria are left as open passages ending blindly. In this way congenital bronchiectasis may originate. These blind saccules also may account for many air-filled cysts. Their collateral air circulation being cut off, owing to the absence of

[1] *The Canadian Medical Association Journal*, July, 1936.

alveolar air-vents, inflation might occur in varying degrees. In explanation of the large air cysts seen in the very young, which commonly cause death by displacement of the mediastinum, it must be assumed that there is a valve opening into one of the atria. Histological studies suggest the existence of cellular redundance at the mouth of bronchioles which might give rise to such valve action.

Adamson does not consider that congenital lung cysts are as uncommon as had been supposed, but clinical recognition has been made possible only by radiography and bronchoscopy. The condition may simulate most chronic lung conditions, such as chronic pneumothorax, chronic tuberculosis with cavitation, chronic pleurisy with effusion, diaphragmatic hernia, chronic empyema and neoplasm. Adamson's analysis of the 49 recent cases showed the incidence in the male to be twice that in the female. Cases are discovered at any period of life; 20% were in infants and stillborn. Excluding stillborn patients and those dying in the first year, the average age of patients when a diagnosis was made was 28, with 70 as the greatest age. Many patients live long and useful lives without symptoms; some die of cyanosis and dyspnœa immediately after birth. This condition explains a proportion of "blue babies". Dyspnœa was present in 60% of the reported cases, cough and expectoration in 44%, and cyanosis in 22%; hæmoptysis occurred in only 4% and gross pulmonary sepsis in 16%. Adamson's study is a valuable contribution to the literature of this subject.

THE CAUSE OF ANGINAL PAIN.

There was a time when Allbutt's theory of the aortic origin of anginal pain split the cardiological camp in twain, but Mackenzie's "exhaustion" hypothesis has in the main survived, if in somewhat altered form. It is generally accepted that Lewis has placed the matter on a firm basis by his work on the relation between ischæmia, muscle work and pain, so that it is with some surprise that we read the following in a recent contribution to literature. "In our opinion *angina pectoris* is due to acute, spasmodic, incoordinated contractions of the œsophagus and stomach." This revolutionary doctrine is based upon some experimental and clinical observations made by D. G. Jackson and Helen L. Jackson.[1]

These authors point out at the outset that more than forty cases have been reported in which complete rupture of the œsophagus has been found, and that the symptoms in these cases have strongly resembled those of coronary thrombosis. They further advance the idea that incomplete rupture or at least œsophageal strain is much more common than is usually believed, and they lay considerable stress on the fact that anginal pain is often relieved by eructation of gas. They have pursued the question further from the experimental aspect and have found that by using special electrodes the œsophagus may be stimulated in an anæsthetized dog so as to produce various phenomena according to the site of stimulation. Thus inhibition of breathing, rapid breathing, auricular fibrillation, and muscular movements of the chest wall, forelimbs, neck and upper part of the abdomen may all be produced in this way. The parallel is suggested between this reflex, contraction of the forelimb muscles, for example, and the area of reflection of anginal pain. Further experimental work has been done by these authors to prove that a stretching of the œsophagus by a rubber balloon will cause a great rise in the pulmonary blood pressure, with corresponding embarrassment of the right side of the heart.

It would seem that altogether too much has been made of this hypothesis, which appears to be far-fetched if applied to all cases of anginal pain. True, there is evidence of the effect of œsophageal stimulation, but this has been known previously, and it seems like a piece of special pleading to try to fit the anginal phenomena into such a pattern. But though a critical review of this work leads us to reject the authors' main thesis, there is yet something of definite importance in their contentions. Though we may not believe with them that "a full stomach or one containing much gas" is the usual initiating cause of an attack of *angina pectoris*, there can be no doubt of the interconnexion of flatulence or of a subjective feeling of tension, as of "indigestion", with the occurrence of angina or coronary occlusion. The type of case referred to in this article is all too common, in which a hale and hearty patient is said to have indigestion and has attacks of pain which may be misleading both in nature and degree, but which are the prelude to a severe or even fatal coronary attack. And though we may not agree that the "indigestion" is really the root of the attack, we must realize how very important it is that the true nature of these bouts of pain should be ascertained. Patients with undoubted coronary occlusion sometimes complain of a hot, burning sensation, as of something they had swallowed, and, indeed, the symptoms referred to the field of distribution of the vagus, and particularly to the digestive tract, are manifold. We cannot think that many will follow the Jacksons in their beliefs and cast aside the theory of coronary spasm entirely, though their view that certain varieties of pain associated with anginal attacks may be due to acute incoordinated spasmodic contractions of the œsophagus and stomach has much to commend it. For the present purpose it is not necessary to enter into a physiological debate, but it may serve a useful purpose if attention is drawn to the great importance of these attacks of so-called "indigestion", particularly in otherwise healthy middle-aged men.

[1] *The Journal of Laboratory and Clinical Medicine*, June, 1936.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Conservative Treatment of the Ovaries.

James Hendry (*The Journal of Obstetrics and Gynæcology of the British Empire*, August, 1936) presented a paper to the British Congress of Obstetrics and Gynæcology reviewing the results of ovarian surgery. The author gives a brief review of the history of ovariotomy leading up to the operation of ovarian grafting. The essential component of a graft is the primordial follicle with its immediately surrounding tissues. The optimum amount is about eight to ten millimetres in diameter and much less in thickness. He reports that Blair Bell, in a series of 113 cases in which menstruation was possible, obtained successes in 70% by means of ovarian graft. Mayer, of Brussels, reported a series of 46 such cases with continued menstruation in 95%; but in six of the cases the function disappeared at the end of two years. Occasionally the graft has to be removed on account of formation of a local cyst. It is easier to conserve the menstrual functions than to secure fertility. It seems to be apparent that if the uterus is removed ovarian transplantation is of little value and the conservation of ovarian tissue is not essential. It seems likely, if it is left, to give rise to more trouble at a later date.

Abdominal Myomectomy.

Arthur A. Gemmell (*The Journal of Obstetrics and Gynæcology of the British Empire*, August, 1936) has completed an inquiry into the present position of abdominal myomectomy. He circulated a *questionnaire* to gynæcologists all over the world; an analysis of the answers received is given in the paper. In addition he has reported the collection of cases treated by Liverpool gynæcologists and has reviewed the more recent literature on the subject. The operation should be confined to women of the child-bearing age; most gynæcologists consider it is suitable only when there is a relatively small number of fibroids. Conservation of the function of menstruation is important. It is wise to make no definite promise to the patient until after the abdomen has been opened. The contraindications include such conditions as malignant changes in the fibroids, a large number of fibroids, simultaneous inflammatory disease of the appendages, tarry cysts of the ovary, great size of the fibroids, rapidity of growth of the tumours, marked anæmia, multiparity, and bilateral ovarian growth. There are four main principles in the operative technique: strictest asepsis, exact hæmostasis, careful closure of cavities, and complete covering of the wound with peritoneum. The mortality in myomectomy is generally lower than in hysterectomy. Recurrences of the fibroids are rare. Fibroids are interfered with during pregnancy only if there are special circumstances with complications. When labour has set in, myomectomy is rarely advisable; hysterectomy is safer. Rupture of the scar in a subsequent pregnancy is a very rare accident.

The Treatment of Sterility.

F. von Mikulicz-Radecki (*Deutsche Medizinische Wochenschrift*, June 26, 1936) considers that the majority of cases of sterility fall into one of three groups. The first comprises those cases in which coitus did not occur at the optimum time. The majority of women do not conform to the regular 28-day cycle postulated by Knaus and Ogino; hence the exact cycle must be determined before advising as to the best time for fruitful coitus. The second group includes cases of ovarian dysfunction associated with amenorrhœa or menorrhagia. In this group the diagnosis is best determined by curettage and examination of the mucosa to determine whether ovulation and luteal formation have occurred. The third group comprises cases with inflammatory changes in the tubes. The results of salpingostomy as well as implantation of the tubes into the uterus are discussed, and both are recommended in suitable cases. The main measures suggested for cases in which there are no gross pathological changes are estimation of the optimum time for conception in each case, salpingography at the time of ovulation and curettage during the premenstrual period.

The Diagnosis and Treatment of Amenorrhœa.

R. A. Tschertok (*Monatsschrift für Geburtshülfe und Gynäkologie*, June, 1936) divides cases of amenorrhœa into five groups. The first comprises cases in which changes in the uterine mucosa are associated with normal ovaries. Here the final link in the chain is missing and any hormonal treatment is useless. In the second group amenorrhœa is due to hypofunction of the ovaries, due to infectious processes and occasionally tumour formation or castration. Various vasomotor phenomena generally associated with the menopause are present. Examination of the urine shows an excess of prolan; treatment consists in the use of preparations of follicular and luteal hormones to increase the existing ovarian hormones. In the third group there is a deficiency of gonadotropic hormone. This may be associated with primary amenorrhœa or may follow delivery—lactational amenorrhœa. In both instances the uterus is smaller than usual and the amount of prolan in the urine less than in the second group. Treatment consists in the administration of prolan and follicular hormone. The fourth group is associated with hyperfunction of the follicles and is noted after puberty and near the menopause. The uterus is enlarged and the mucosa hypertrophic. Luteal preparations are used to replace the defective formation of *corpora lutea*. A final group comprises cases due to general infective processes and can be treated only along general lines, as it has nothing to do with hormonal influences.

The Treatment of Eclampsia with Thyroxin.

F. Bonilla and F. Goebel (*Monatsschrift für Geburtshülfe und Gynäkologie*, June, 1936) discuss the effect of thyreoid preparations in eclampsia. They have investigated the antagonism existing between the posterior part of the pituitary and the thyreoid glands. Experiments showed that if mice were given thyroxin for several days and then injected with 1·5 units of pituitary extract death soon followed. No such lethal effect was observed in control animals. Death was apparently due to coronary spasm. These results are in contradistinction to what was claimed by Nicholson, who maintained that eclampsia could be cured by the use of thyreoid extract. The authors believe that any success was obtained only in essential hypertension, the thyreoid preparation acting as a diuretic and thus controlling cases of eclampsia where the renal lesions were predominant. A full summary of the literature on the subject is appended.

Perforation of the Uterus.

H. Nevinny (*Deutsche Medizinische Wochenschrift*, June 26, 1936) describes two cases of perforation of the pregnant uterus associated with severe damage to the intestines. In the first case, during a criminal abortion the uterus was perforated and forty centimetres of large intestine were torn off, while a loop of small bowel in addition was withdrawn as far as the vulva. After hysterectomy the small bowel was resected and joined by side-to-side anastomosis, the rectum was closed and an artificial anus was formed. The patient died within four days from peritonitis. In the second case the perforation was sutured as well as a laceration in a loop of small bowel and the abdomen drained *per vaginam*. The patient made a complete recovery. The author states that perforation of the small intestine as well as the large is most unusual in such cases.

Eugenic Sterilization.

R. Dyroff (*Monatsschrift für Geburtshülfe und Gynäkologie*, April, 1936) describes his experiences with eugenic sterilization in a series of 100 cases. Two-thirds were done for schizophrenia, one-fifth for congenital feeble-mindedness, and the remainder for epilepsy, manic-depressive insanity and congenital deafness and dumbness. Excepting when there is great excitement spinal anæsthesia gives the best results. He believes that crushing the

tubes by the Madlener technique, together with two silk ligatures to control the blood supply to the crushed section of the tubes, is sufficient when the tubes are normal. If any pathological conditions are present the tubes should be excised. The average convalescence was eleven days. Restless patients must be carefully watched and the binder so applied that it cannot be undone by the patient. Such patients are best nursed in asylums with their trained staffs.

Radical Treatment of Chronic Salpingo-Oophoritis.

E. BAUMGART (*Monatsschrift für Geburtshülfe und Gynäkologie*, May, 1936) discusses conservative and radical methods of treatment of chronic inflammation of the tubes and ovaries. She points out that in many cases of pelvic inflammation where, on account of the patient's youth, conservative surgery is carried out, further operation is required because of the continuance of symptoms. Illustrative cases are appended to prove her contentions. Therefore she has come to the conclusion that unless an ovary is only slightly affected it is far better to remove completely both tubes and ovaries and so prevent many months of chronic invalidism and further operations. In her experience no ill-effects have followed such radical procedures, even with young patients.

OBSTETRICS.

The Acute Toxic Hypertensive Syndrome of Pregnancy.

R. D. MUSSEY (*American Journal of Obstetrics and Gynecology*, June, 1936) correlates the retinal changes with the clinical findings in 108 patients with the acute toxic hypertensive syndrome of pregnancy. For the purposes of classification Wagner's description of the retinal changes in cases of pre-eclamptic toxæmia are divided into four consecutive stages, dependent on the severity and duration of the hypertension accompanying the toxæmia: (i) The first visible sign is spastic narrowing of the arterioles of the retina, which may affect all branches of the central artery. (ii) Where there is irregular constriction of the lumen of the arterioles, usually first or more marked in the smaller branches, it may vary in degree and situation from day to day. (iii) As the narrowing and constriction become more fixed, individual cotton-wool patches and hæmorrhages may appear in the retina. (iv) Diffuse retinitis of albuminuric type may develop. It was found that the increase in the degree of changes observed appeared to be in direct proportion to the height of the systolic blood pressure. It was noted that when the systolic blood pressure was less than 180 millimetres of mercury no changes of Grade IV developed. When the vascular lesion of the retina is marked and the injury progresses to such a degree that narrowing of the pre-capillary vessels may be associated with sufficient intimal thickening to close the lumen and cause local necrosis and hæmorrhage, it is conceivable that vessels throughout the body are involved. At necropsy it has been found that this is so, as demonstrated by the damage to the pre-capillary vessels of the brain, heart, lungs, liver and renal glomeruli; it is probable that the periportal thrombosis in the liver may be attributed to pressure of hæmorrhage from injured arterioles. Information obtained by retinal examination of patients who have acute hypertensive toxæmia of pregnancy is a distinct aid. Persistent spastic conditions of the retinal arterioles or more advanced retinal changes, such as cotton-wool exudates and hæmorrhage, indicate that pregnancy should be terminated promptly.

The Quantitative Friedman Test in Hydatidiform Mole and Vomiting of Pregnancy.

F. J. SCHOENECK (*American Journal of Obstetrics and Gynecology*, July, 1936) attempts to establish standards as a basis for the quantitative Friedman test. It was found that in two cases of hydatidiform mole excessive excretion of the substance for the reaction was present. In two other cases this did not occur; but on examination the moles did not present a typical pathological picture. They had probably ceased to grow and were actually undergoing degeneration. The test would seem to open a new avenue of approach to a possible ætiological explanation of vomiting of pregnancy, as the presence of an excessive amount of the substance responsible for the reaction in the urine has been consistent and has been quite constant, in contrast with the findings in normal pregnancy. The author feels that he is able to eliminate the factor of mere concentration of the urine, and, whilst there is insufficient evidence to advance a hormonal explanation of the cause of vomiting of pregnancy, the evidence would seem of sufficient importance to warrant further investigation.

Post-Abortion and Puerperal Gas Gangrene.

A. M. HILL (*The Journal of Obstetrics and Gynæcology of the British Empire*, April, 1936) discusses post-abortion and puerperal gas gangrene in detail and gives a report of thirty cases that occurred at the Women's Hospital, Melbourne, in twenty-three months. The bacterial aspect is dealt with, together with the clinical side, embracing prevention, symptoms and treatment. In the thirty cases recorded, twenty-two were associated with abortion and eight with labour at term or near term. The mortality rate was 63% of all cases. Six out of the eight puerperal patients died. In every one of the puerperal cases interference had taken place, such as Cæsarean section, vaginal plugging, manual removal of the placenta, a rectal tube induction (twice) and forceps delivery (once). With long-standing rupture of the membranes and death of the fœtus this condition is prone to develop, especially when there have been trauma, shock and hæmorrhage. Any of the following symptoms in patients who have run the risk of infection is suggestive: jaundice, increasing pulse rate out of proportion to the evident lesion; pain of a severe nature in uterine or skeletal muscle accompanied by severe shock (this was present in 26% only of the present series), sudden collapse for which no explanation can be found. Where predisposing factors exist, the prophylactic intramuscular injection of 20,000 to 40,000 international units of *Bacillus welchii* antiserum is advised. If there is an offensive or necrotic-smelling liquor or vaginal discharge, the larger dose should be used forthwith and repeated in two or three hours if the patient's condition is not satisfactory. As regards treatment with serum, 40,000 units are given as a routine, followed by 40,000 to 60,000 units intravenously. The injection is given every twelve hours for three days, then one dose a day. Serious cases usually require 200,000 to 600,000 units over the course of a few days. In addition to serum therapy the main principles underlying successful treatment are early diagnosis, early elimination of the primary focus, general therapy, with attention to renal failure and alkali therapy.

Pelvimetry and Fœtal Cephalometry by X Rays.

ROBERT P. BALL (*Surgery, Gynecology and Obstetrics*, May, 1936) describes a method of X ray pelvimetry and fœtal cephalometry by which the volume of the fœtal head is compared with the capacity of the pelvis. If the volume of the head is less than that of the pelvis, it should theoretically be able to mould so as to pass through the pelvic cavity. Moulding of the fœtal cranium is the result of a shift in the volume of a spheroid as it is forced through an opening of smaller capacity. It is valuable information to determine the amount of shift in volume that may occur without fœtal mortality. The author suggests that this ratio should be determined before the onset of labour; by means of a graph which shows the rate of increase in volume of the cranium, the size at a subsequent date can be determined. The author has introduced a new instrument, the "pelvicephalometer", for correcting the magnification of a Röntgenographic image; its application to obstetrical patients is described. Several case reports are presented in a graphic form for comparison and to show the accuracy of the procedure.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, East Melbourne, on July 1, 1936, Dr. Walter Summons, the President, in the chair.

Fibrositis.

Dr. Frank May read a paper entitled "Fibrositis: Treatment by Physical Means" (see page 447).

Dr. E. L. Cooper opened the discussion on the pathological and medical aspects of fibrositis. He said that the term "fibrositis" was taken to include acute and chronic inflammatory changes occurring in the fibrous tissues which acted as supporting structures in muscles, tendons, fasciæ and nerves. The tissue supporting the parenchyma was made up of cells—fibroblasts or connective tissue corpuscles with a relatively large amount of intercellular substance containing fibrils of various types. Within this connective tissue were small and large spaces—some actual cavities, others merely potential spaces. Some of these spaces were lined completely or partly by connective tissue cells. A bursa was merely a very large connective tissue space, and the normal fluid content of a bursa had a composition and function similar to that of the fluid intercellular substance of other connective tissues. Further, the cavities of joints and synovial cavities were merely complex connective tissue spaces, the walls of the joint being formed by modified connective tissue and the synovial fluid being connective tissue fluid.

A realization of this unity of the supporting connective tissues of the body and the widespread distribution of these tissues simplified a consideration of the inflammatory condition known as fibrositis. Thus fibrositis included myositis, panniculitis, tendinitis, bursitis, and interstitial neuritis known as sciatica or brachial neuritis. This term also included myalgia, occipital neuralgia and many other vague painful conditions. Inflammation in the connective tissues was characterized by accumulation of fluid in the tissue spaces and by accumulation of cells, either lymphocytes or macrophage mononuclear cells. In the most acute varieties of fibrositis there were dilatation of blood vessels and a concentration of small round cells in the perivascular area. There was no migration of polymorphonuclear cells and no suppuration. There might be minute areas of tissue necrosis, but there were no Aschoff bodies. In less acute cases the majority of the cells were macrophages, coming either from the blood stream or arising by multiplication of the fixed connective tissue cells. The majority of these acute cases of fibrositis subsided and left no residue, but in a few cases the macrophage cells were replaced by fibroblasts and permanent fibrosis occurred.

Dr. Cooper said that diffuse fibrositis was less common than localized areas of inflammation. When these localized areas occurred in the fibrous tissue supporting voluntary muscle cells, localized areas of spasm of muscle cells might occur and these areas might be both palpable and painful. In diffuse acute fibrositis in a muscle the whole muscle might be held rigid.

In the more chronic varieties of fibrositis occurring in muscle, minute, firm, fibrous nodules might be palpable years after the original lesion arose. The nodules of fibrositis were extremely tender and might persist for years; the subcutaneous nodules of acute rheumatism were of short duration and never tender.

The fibrous tissues contained many nerve fibres which might be involved in the inflammatory process described above, giving painful nodules in the muscles and elsewhere; but when the supporting connective tissue of nerve trunks was involved, then the fibrositis became extremely painful and might be associated with loss of function in the nerve. Brachial neuritis and sciatica were the best known varieties of these interstitial neuritides, but the process might involve any nerve trunk in the body.

Dr. Cooper said that in acute cases of sciatica the nerve trunk was swollen and œdematous. If the nerve was needled or cut, fluid escaped, sometimes in large quantities. Microscopic examination showed a vascular engorgement, with areas of œdema, increased numbers of endothelial cells (macrophages) and groups of lymphocytes. In the more chronic forms of interstitial neuritis, thickening of the fibrous tissues occurred by organization of the macrophage cells, particularly in the perineural space. Actual adhesions of the nerve to the surrounding tissues might occur. The sciatic nerve might be bound down to the gluteal muscles or even to the bony pelvis. When thickening of the nerve occurred in a narrow space, such as the intervertebral foramina, in root sciatica or brachial neuritis, or when a nerve passed through a hole in a tendon, as in suboccipital neuralgia, then pain might be extremely severe and associated with muscle wasting and even trophic changes.

Dr. Cooper said that he had dealt so far with myositis and interstitial neuritis; but inflammation of the supporting tissues occurred in other situations. Fascia was commonly involved and tender nodules were often found clinically. The subcutaneous tissues and the tendinous insertions of muscles often contained fibrous nodules. On microscopic section these nodules were found to contain fibroblasts and endothelial cells (macrophages) with some fluid accumulation in the tissue spaces. Thus there were a unity of the connective tissues and a similarity in the reactions of inflammation in all these tissues; no distinction could be made between the pathological processes of myositis, interstitial neuritis and tendinitis. They were all included in the term fibrositis.

Dr. Cooper said that in the acute phases of a pathological condition in which there were dilatation of vessels, effusion of fluid and accumulation of cells, rest was indicated, and the majority of patients with acute fibrositis were relieved by immobilization and the application of local heat. Salicylates given by mouth or applied locally in the form of methyl salicylate foments often relieved pain; but more powerful analgesics, such as phenazone, pyramidon, "Veramon" and even morphine, might be necessary in severe cases.

In more chronic conditions of fibrositis a search was made for foci of infection, not only in the teeth and tonsils, but also in the genito-urinary system and elsewhere. Trauma bore some relationship to the actual onset of fibrositis in a susceptible individual. Dr. Cooper said that mild injuries even in highly trained athletes were often followed by acute widespread fibrositis in the muscles and tendons; in the prophylaxis of fibrositis the importance of climate and of occupation should be mentioned; he pointed out that males working out of doors and doing manual work were more liable to fibrositis than dwellers in a city. Certain patients and certain families were victims of fibrositis more often than others. A slight muscular strain or a mere chill might result in severe fibrositis. Racehorses of certain strains were liable to attacks of fibrositis and were known to break down during training.

In conclusion, Dr. Cooper said that the unity of the supporting tissues had been emphasized. Perhaps one could also postulate an inborn deficiency of these tissues, an inability of the connective tissues to react in a normal manner to the minor traumatic and toxic episodes of life.

Dr. R. Howden congratulated Dr. May on the skilful and fair way in which he had presented an admittedly difficult subject and one that was economically so important; for those conditions which were rather loosely called the chronic rheumatic diseases (of which fibrositis was one form) were one of the most fruitful causes of invalidity, temporary or permanent, which affected the general population. Dr. Howden said that he supposed the great majority of the members present had at one time or another suffered from some manifestation of this condition, whether they called it muscular rheumatism, neuritis, lumbago or backache. He asked why it was that one person with a granuloma at the root of one tooth had general or local bodily pains and aches, whilst another person whose mouth was pouring pus had none, or very slight general effects.

He said that doubtless most of his listeners had seen patients with backache or with one joint stiff and/or painful, whose symptoms had subsided after the removal of an infected tooth without any other treatment. They had very likely seen others who, on removal of several infected foci (teeth or otherwise) had had a marked increase in all the symptoms. Dr. Howden said that they spoke of lowered resistance and an overwhelming dose of toxin as the reasons for that particular peculiarity; but if this was so why did the next person who had several teeth or foci removed suffer nothing more than a temporary discomfort? Dr. Howden said that he thought that in the present state of their knowledge medical practitioners must recognize a constitution, a diathesis, a make-up, which rendered some people liable and others not liable to those conditions. Such a constitution was like a charge of gunpowder, which only needed a detonator in the shape of a focal condition or the lowering of resistance to set it off. It might explode suddenly with a "bang" when there was an acute onset (this was not so common); or it might just "fizzle", which was the common subacute or chronic onset. Dr. Howden asked how it was possible to make the soil less vulnerable to those detonators. He said that when he was in England and America a few years ago he had become very interested in the vaccine treatment of these conditions, and what he saw there convinced him, almost against his will, that there was much to commend that form of treatment. He had seen several hundred patients being treated and had had full access to their history cards; though vaccine treatment was not always entirely successful, it was a very great aid in the treatment of these difficult cases. Warren Crowe in his clinics used the pathogen-selective method in preparing his autogenous vaccine, which he used in conjunction with a stock vaccine, consisting of a number of strains of typed streptococci and a white staphylococcus which he called *Micrococcus deformans*. Small doses of the vaccine were used in the clinic, testing doses consisting of 200,000 of the streptococcus and 200,000 of the *Micrococcus deformans*, while treatment doses were frequently considerably smaller; Crowe's object was to give a dose that would produce a response but not a reaction. Dr. Howden said that at Peto Place, Crofton had used autogenous vaccines, chiefly obtained from the urine, but also from the teeth and other places, including the post-nasal space; Crofton used doses up to four hundred and five hundred million bacteria. Eidenow had taken cultures from both the bowel and the throat and had sterilized his vaccine by exposure to mercury vapour lamps for two hours; he thought that the vaccine was less toxic prepared in this way; he gave injections twice a week in a series of twelve, working up to doses of five hundred and six hundred million bacteria.

Dr. Howden said that at the Red Cross Hospital for Chronic Rheumatic Diseases at Peto Place, where physiotherapy was carried out very thoroughly and with a considerable degree of success, a number of patients were sent to the vaccine therapists connected with the hospital, and after some months of treatment the results were reviewed in the physiotherapy department. The conclusion had been reached that the condition of the patients was unchanged, although the patients themselves and the nurses were quite sure that their condition had definitely improved under the vaccine treatment.

Dr. Howden said that since his return from abroad he had treated a fairly large number of patients with Warren Crowe stock vaccine, to which had been added, in a majority of cases, an autogenous vaccine obtained from various sources, and he had had a fair amount of success. He said that it was not claimed that vaccine treatment alone would remove fibrositic nodules (though they did often disappear during the treatment), but he believed that, in association with physiotherapy, it was in the present state of their knowledge the best method of attack; he agreed largely with the views Dr. May had set forth.

Dr. Howden said that he had been trying recently the effect of lipovaccine (which had been supplied to him by Warren Crowe and by Fitzgerald, of Sydney) and still more recently he had been injecting that vaccine in the region of the fibrositic nodules; but so far he had not done sufficient work in that direction to warrant any definite statement. Türck, of New York, had suggested injecting 0·25 cubic centimetre of chloroform subcutaneously in the lumbar region, his theory being that that would cause damage to the endothelial cells with the liberation of a substance which he called "cytost", perhaps the "*H* substance" referred to by Dr. May, and he believed that that substance uniquely controlled cellular activity. Dr. Howden said that he had tried the treatment in a few patients but had not been very favourably impressed. He also said that he had not had much success with gold injections or bee venom, but had heard others claim success, which made him wonder if the various methods of treatment had not all one common factor, perhaps the "*H* substance" referred to. Dr. Howden had abandoned protein shock therapy some time ago because it was not unaccompanied by risk. In conclusion he said that he believed it was to the biochemists that they had to look for a solution of the effective treatment of this condition in the future.

DR. FRANK TRINCA thanked the lecturer and previous speakers for their informative survey. Among the many questions raised by discussion of the rheumatic state, two seemed of major interest. The first of these was the effect of trauma as an exciting cause, operating on a wider constitutional background. In a series comprising some thousands of cases the intrusion of trauma as a secondary exciting factor had been encountered in at least 80%. In the background was a general rheumatic diathesis of fibrositic change which engaged in a local crisis as the result of some disturbance of the *status quo* caused by injury. This general diathesis appeared as much allergic as inflammatory and was reared on a lifelong sensitization due to absorption of bacterial toxins. Dr. Trinca was at present conducting some researches in an attempt to elicit what occurred locally as an issue of trauma. There were three possibilities. The first two were philosophical conceptions, but the third was capable of experimental analysis.

First, trauma lowered resistance and bacteriæmia associated with rheumatism might bring about something in the nature of an "infected bruise". Failure to cultivate streptococci directly from rheumatic lesions threw doubt on this hypothesis. Secondly, there existed a definite filtration system between the capillary bed and the reticuloendothelial and lymphatic systems, the latter being particularly involved in rheumatic states. Did trauma rupture this filter and cause infection or toxic effects in an "inner compartment" of the human interior, selectively prone to rheumatic involvement? This again was hard to prove. Recently a third and more practically approachable suggestion had been evolved. It was wondered if injury, in causing damage to living tissues, gave origin to a metabolite of a known or unknown nature which provided a nutrient nidus for bacterial growth or tissue sensitization in the presence of toxins. Definite experiments, still being pursued, had been devised to test out this third hypothesis. Exudate was extracted from bruised tissues, specimens contaminated by excess of blood being rejected. This bruised extract was added to blood-agar culture media. *Streptococcus hæmolyticus* was then added to such plates and distinctions were noted as compared with control cultures. Macroscopically the bruised extract plates showed a most profuse and moss-like growth, as compared with linear spread of the controls. When bruised extract, taken twelve hours after injury, was used in the culture medium, the streptococcal chains were found greatly increased in length and more robust morphologically. In twenty-four hours fission was so active that chain structure was replaced by a diplococcal one, a factor no doubt associated with greater faculty for dissemination *in vivo*. An analysis was now being conducted to identify the body or metabolic state responsible for these facts. To state a parallel, it was known that antigen was fixed by complement in the immunological processes of the body. Did an analogous coupling type of body exist which might act as an "implement", so giving chemio-tactic attachment between bacteria or toxins on the one hand and living tissues on the other? Tentatively Dr. Trinca

had suggested the term "traumatin" to designate this body.

It was again realized that in a congested area the pH value might be altered and toxic effects thus promoted. In a dilution of 1 in 1,800 of bruised extract in saline solution the pH value was found to be greatly increased. Comparative figures were: normal extract, 7·2; normal saline solution, 6·4; bruised extract, 5·6, indicating a gross swing to acidity. From a practical point of view the aim was to identify perhaps an overlooked factor, *H*-body perhaps, capable of aiding and abetting bacterial onslaughts on the human host. (Such might be formed in tissues by other causes, as when influenza prepared the way for a pneumococcal attack on tissues). When isolated, a body such as the "implement" appeared to be, might be inoculated to produce "anti-implement", which might in turn be used to insulate the human host against floral invasion, just as streptolysin, for example, could be used to produce anti-streptolysin and this to produce anti-anti-streptolysin, and so on. This work was as yet in its infancy, but gave sufficient promise to justify the employment of a full-time bacteriologist in the many avenues opened up.

The second aspect of rheumatism which needed emphasis was that of allergy. At this meeting slides had been shown of tissue changes summed up as fibrositis. To what extent were the cellular changes of fibrositis *et cetera* an "organic" allergic response, such as was seen in thickened antral mucosa in hay fever subjects? Here hypertrophy was so great that sufferers might be operated on for a suspected pus content of the antrum. Had histological sections been taken of "allergized" mucosa and a search made for changes such as those described by Dr. Cooper in fibrositis as white fibrous tissue hyperplasia and macrophage determination? There was no doubt regarding the allergic sensitivity of rheumatic subjects. A male who had had severe generalized fibrositis for sixteen years was benefited sufficiently to resume arduous duties without discomfort. Soon after, he presented himself in a lachrymose state through not having slept for two nights, with painful swelling of the hand and forearm of the nature of an acute panniculitis. He had eaten for the first time, not wisely but too well, of paw-paws. Colonic lavage and general treatment for allergy cleared the condition up in forty-eight hours. If this had been a genuine rheumatic relapse, it would have persisted longer and not suddenly have vanished. In a series of six cases again Dr. Trinca had encountered a number of cases of allergic panniculitis of the leg following insect bites. Some of these cases developed into frank atrophic rheumatoid arthritis of a very resistant allergic type.

DR. COLIN MACDONALD said that he was himself a sufferer from what Sir Walter Scott had called "that bitch of rheumatism", and he had come out on that wintry night to ask a few questions. He was anxious to know whether any of his senior colleagues had ever heard of a series of cases in which pathological mucosa of the antra had cleared up as a result of surgery. He would also like to know of a drug which could be relied upon to relieve the symptoms of rheumatism; he knew of the value of rest and heat applications, but had got very little relief from sodium salicylate, aspirin-phenacetin-caffeine powders or "Veramon". The other question concerned the advisability of compelling boys at college and elsewhere to take cold showers. For a number of years in his youth no hot shower had been available, and even today the authority of the medical profession was used to compel youngsters to take cold showers. Dr. Macdonald raised a doubt as to whether this was wise and thought that cold showers were possibly harmful for rheumatic subjects, in winter time at all events.

DR. JOHN KENNEDY said that he had not heard Dr. May say anything about the infection of the upper air passages as a very potent cause of rheumatic conditions. He had known instances in which an attack of influenza had caused such an infection to flare up to such a degree that the patient had died. In his work as a medical referee he saw many cases of severe rheumatism and he thought that in many ways the treatment left much to be desired. Practitioners often missed foci of infection in such places as the tonsils, upper air passages and teeth, which had caused supposed "strained back"; these ætiological factors should be emphasized to those in practice with the object of more efficient treatment and less invalidity. Like Dr. Macdonald, Dr. Kennedy wished to know what drug was most useful for the pain of fibrositis.

DR. WALTER SUMMONS thanked Dr. May for his very wide discourse on a subject that was very wide itself. He was surprised to hear Dr. May mention gout; he thought it had disappeared and had become a lost disease. Dr. Summons commented on the divergent views on vaccine. He had been disappointed with Warren Crowe's vaccine; he had used it some years ago, when it had been difficult to obtain, but had not obtained satisfactory results with it. He wanted to know what age a patient had to be for Dr. May to hesitate to carry out the manipulations that he had demonstrated.

Dr. May, in reply, thanked Dr. Cooper for his excellent discussion of the pathological side of the subject; it was hoped that he and Dr. Cooper would be able to bring forward a little more local research work at a later date. Dr. May wondered if a common cause might be found for a great deal of ill-health, including osteoarthritis and rheumatoid arthritis. Dr. May explained that it was not always possible to bring about a complete disappearance of all the nodules; the swelling would go down and the nodules would get smaller and less tender, but he did not require the complete obliteration of the nodules before he regarded a patient as cured. When he had referred to the foci of infection he had intentionally omitted the commoner and more important ones and had referred only to those which were not so often recognized. He had been surprised at the frequency with which he had encountered such conditions as periarticular adhesions of the shoulder joint following minor injuries two or three days earlier. He knew very little at first hand about vaccine treatment, but, like Dr. Howden, he had been at Peto Place and knew that Heald and Crofton had chosen the very worst patients for vaccine therapy and that later on they were better; in addition to the vaccine, all known methods of treatment had been used for some of these patients, and Dr. May had not been able to satisfy himself to what extent the vaccine treatment should get the credit. He agreed with Dr. Trinca that trauma was an enormously important factor in the ætiology, and he had read with interest the report of the Royal Commission which had dealt with the subject of allergy in rheumatism, but he did not profess to be able to take part in a debate on this aspect of the subject. He was not able to give very satisfactory answers to the questions that Dr. Macdonald had asked, but he could say that he had seen many patients who had been operated on for chronic antral disease and who had had a great deal of trouble afterwards. Dr. May was a physiotherapist and was afraid he could not give any useful information about drugs; but he knew the value of hot showers for rheumatic people and thought there might be something in Dr. Macdonald's objection to cold ones. He agreed with Dr. Summons that acute gout was very rare, though chronic gout was still seen. He had carried out the manipulations that he had demonstrated that evening on some quite old people without any harmful consequences.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal North Shore Hospital of Sydney on June 18, 1936. The meeting took the form of a series of clinical demonstrations by members of the honorary staff. Parts of this report appeared in the issues of September 19 and September 26, 1936.

Rupture of the Urethra.

DR. COLIN EDWARDS showed a series of radiograms taken from a patient who had suffered from rupture of the urethra. He first of all demonstrated two normal urethrograms, one taken in the oblique plane and the other in the antero-posterior view.

The patient was a male, aged fifteen years, who had suffered fifteen months previously from fracture of the pelvis with rupture of the urethra and extravasation of urine. Cystostomy was performed and multiple incisions were made for drainage soon after the accident. Subsequently an indwelling catheter was inserted, but was frequently removed by the patient.

On admission the patient had a suprapubic fistula with a keloid scar draining pus and urine, a perineal fistula with a keloid scar draining pus and urine, an impassable stricture of the urethra and osteomyelitis of the pubis.

A plain radiogram showed a suprapubic tube which was inserted into the fistula, a foreign body not mentioned in the history, and osteomyelitis of the pubis.

A cystogram showed the relation of the foreign body to the bladder. At this time urethrography was impossible owing to the impermeable stricture.

An antero-posterior urethrogram after removal of the foreign body and sequestrum and repair of the urethra was shown.

An oblique urethrogram after operation showed the acute angulation of the urethra (rendering instrumentation very difficult) and the sinus from the site of the sequestrum to the urethra.

The perineal and suprapubic wounds were healed without keloids and the patient passed urine *per urethram* about every four to six hours. The minimum calibre of the urethra was 15 French.

A male of twelve years had been kicked in the perineum as an infant. He had never passed urine *per urethram* since.

An oblique urethrogram showed an impermeable stricture. The opaque medium had entered the veins of the pelvis, demonstrating the facility with which fluids might be absorbed into the blood stream from the urethra.

An intravenous urogram showed a spherical bladder with dislocation forwards of the bladder neck. The absence of a vesico-rectal fistula was demonstrated.

A skiagram taken immediately after the preceding one was shown. Manual pressure had been exerted over the region of the bladder and the opaque fluid passed into the rectum. A urethro-rectal fistula was demonstrated. The patient was unconscious of bladder-filling, desire for micturition or evacuation of the bladder. It was therefore considered inadvisable to attempt repair of the urethra, as he would probably have incontinence of urine or automatic micturition. At present the rectal control was perfect, except on considerable exertion.

A male, aged forty-two years, had suffered from a fractured pelvis and rupture of the urethra with extravasation of urine sixteen years previously. Since then the patient had had thirty-seven operations. On admission to hospital he had a perineal fistula with frequent, painful and difficult micturition.

A plain radiogram showed renal calculi and phosphatic deposit on the bladder wall. The bladder was dislocated from the mid-line.

A man, aged fifty years, had suffered from an inflammatory stricture with retention of urine. Rupture of the urethra occurred during attempted instrumentation elsewhere. Extravasation of urine occurred and was drained by multiple incisions. Suprapubic drainage was instituted.

An antero-posterior urethrogram taken after combined internal and external urethrotomy showed the site of the original stricture in the proximal portion of the bulb with the dilated urethra proximal to it.

An oblique urethrogram taken at the same time showed a large abscess cavity in the region of the right lobe of the prostate gland, connected to the urethra by a double fistula.

A Post Mortem Specimen.

Dr. Edwards also showed a *post mortem* specimen taken from a man, aged fifty-nine years. For ten years the patient had suffered from recurrent attacks of retention of urine and difficulty in micturition. Owing to persistent pyuria, poor renal function tests and indifferent general condition, cystostomy was performed. Six months later, prostatectomy with repair of the bladder neck was carried out. Three weeks after the second operation, after the wound had healed and micturition had been established, a sudden exacerbation of the preexistent pyelonephritis occurred, which culminated in the death of the patient six weeks after operation.

The specimen consisted of the kidneys, ureters, bladder and prostatic urethra, removed *post mortem*. The feature of interest lay in the complete healing of the prostatic cavity within six weeks in spite of the gross sepsis.

Paralytic Convergent Squint.

Dr. E. C. Temple Smith showed a girl, aged eleven years, who had had a paralytic convergent squint from birth, due to a complete paralysis of the left lateral rectus (sixth nerve). Three weeks previously a grafting operation had been done. All four tendons were exposed; a recession was done on the medial; a lateral slip was isolated from the superior and from the inferior rectus tendons, and these were attached to the insertion of the lateral rectus.

A photograph was shown of the former condition, in which there was a pronounced convergent squint and inability to move the eye laterally to the left beyond the mid-line. The patient at the time of the meeting had no squint in the primary position, and there was a fair amount of movement to the left.

Retinitis Pigmentosa.

Dr. H. L. St. Vincent Welch showed a girl, aged fifteen years, who was suffering from *retinitis pigmentosa*. The diagnosis was based originally upon the nyctalopia, contraction of the retinal vessels and the yellowish tinge of the optic disks. The first deposit of "bone-corpuscle" pigment did not appear until eighteen months later. After a further six months had elapsed a second pigment deposit appeared; no others had appeared since.

There had been partial deafness of both ears since very early childhood, but there was no familial history of deafness or deaf mutism, supernumerary digits *et cetera*. The Wassermann test gave no reaction. At fortnightly intervals three attempts had been made to dilate the retinal vessels by means of hypodermic injections of acetylcholine; but at each attempt no change in the calibre of the vessels could be seen fifteen minutes and again thirty minutes after the injection. The visual fields showed progressive contraction. There was, so far, no change in either lens.

Quinine Amblyopia.

Dr. Welch's second case was one of quinine amblyopia in a female, aged thirty-six years. Eight months previously a total of forty grains of quinine sulphate had been taken, in capsules, between the hours of 7 a.m. and 9 a.m. At 2 p.m. the vision of both eyes became reduced in the course of a few minutes to the bare perception of light, and so remained for thirty-six hours, after which the vision began to improve. When the patient was seen twelve days later the vision in the right and left eyes was $^{6}/_{12}$. The retinal arteries were thread-like, but there was little or no change in the colour of the optic disks, and, strangely enough, there was hardly any contraction of the visual fields. At the time of the meeting the vision in both eyes was $^{6}/_{6}$ (part) and the calibre of the retinal vessels had definitely increased, though a considerable degree of constriction persisted. The optic disks were paler than normal and Dr. Welch said that some degree of optic atrophy might be expected as time went on.

Other Ophthalmic Conditions.

Dr. Welch then showed a patient suffering from detachment of the retina, who had been operated upon two and a half years previously by the Larrson method; a patient with chronic interstitial nephritis with arteriosclerotic changes of the retinal vessels and a macular star-figure; a patient with thrombosis of the central vein of the retina showing new vessel formation upon the optic disk; a patient with diabetic retinitis, and one with chorioiditis. In the last-mentioned case the Wassermann test gave no reaction.

(To be continued.)

Medical Practice.

PRESCRIPTIONS.

We have been asked by the Medical Secretary of the Victorian Branch of the British Medical Association to publish the following notice, a copy of which has been forwarded in the form of a circular letter to all members of the Victorian Branch.

Prescriptions.

The following letter has been received from the Secretary, Pharmaceutical Society of Victoria, under date 25th August, 1936:

Dear Sir,

At a recent meeting of the Council of this Society reference was made to the fact that prescriptions for some of the more frequently prescribed drugs are issued by medical practitioners without any directions as to dosage, etc.

For example, it was stated that prescriptions for Luminal tablets are often presented at pharmacies and the dispenser, because of lack of directions, is unable to advise the customer whether a half, one, or more tablets are to be taken, or at what intervals.

Directions, of course, are given orally to the patient, but very frequently are not remembered.

If your Council could draw the attention of members of your Association to the necessity for writing full directions on all such prescriptions, such action would be appreciated by my Council.

Yours faithfully,
(Signed) C. L. Butchers,
Secretary.

Members are also reminded of the provisions of Section 16 of *The Medical Act*:

Every written prescription of a legally qualified medical practitioner shall be dated and bear the address and usual signature (including the surname) of such practitioner.

Every such practitioner who contravenes or does not comply with the provisions of this Section shall be liable to a penalty of not more than Five pounds.

The Branch Council trusts that members will comply with the request of the Pharmaceutical Society and the provisions of *The Medical Act*.

C. H. Dickson,
Medical Secretary.

Correspondence.

HISTIDINE TREATMENT OF PEPTIC ULCER.

Sir: Dr. Loughran, in his letter of September 5, repeats a statement from which a conclusion that is not entirely warranted is drawn. The value of histidine in the treatment of gastro-duodenal ulceration is not as yet proven, but sufficient reports of complete or partial success have appeared to justify a more extensive trial of the method. Dr. Loughran suggests that the development of epigastric pain during treatment indicates that histidine, instead of being a curative agent, is harmful. To discontinue investigation of this line of treatment for this reason is not fair to the method, as its initiator, Emile Aron, pointed out that in certain cases accentuation of symptoms occurred during the series of injections, ceased when the series of injections were completed, and the patient's progress subsequently was entirely satisfactory, as indicated by relief of symptoms and by radiological evidence of healing. It has been my experience that in a few instances symptoms have been temporarily increased, but the exacerbation only lasted a few days, but I have not met with a case such as Dr. Loughran describes, where the symptoms persisted to the twelfth day. Aron, in describing such a case, remarks:

> *Un premier malade, atteint d'ulcus duodénal, constata une recrudescence marquée des douleurs dès le début du traitement. Jusqu'à la dernière piqûre ces douleurs persistaient, plus vives qu'auparavant, puis, une fois la série terminée, elles cessèrent en trois ou quatre jours, pour faire place à une période de bien-être telle que le malade n'en avait pas connue depuis un an.* (*La Presse Médicale*, July 27, 1935, page 1197.)

He explains increase of local symptoms as indicating a local reaction, and considers that such an exacerbation does not indicate failure of the therapeutic agent, but rather evidence of its activity.

On account of this focal reaction I have always been loath to prescribe histidine within three weeks of gastric hæmorrhage, but with this limitation: my feeling, as yet unsupported by sufficient clinical evidence, is that histidine is harmless, in many cases appears to be helpful, and in a few cases causes dramatic relief of symptoms, not obtained by other methods of therapy.

Yours, etc.,
J. G. Hayden.

55, Collins Street,
Melbourne,
September 11, 1936.

THE CHINK ANTRUM.

Sir: In reading Dr. Cecil Cantor's interesting description of his case reported in The Medical Journal of Australia of August 29, 1936, there are two points of interest to which I should like to refer.

Firstly, as Dr. Cantor states, Cheatle and other authorities have taught us that the mastoid antrum is always present and also that arrest of or non-pneumatization of the mastoid process is developmental and not due to inflammation.

Again it is agreed that healthy mastoid processes in the same persons are more or less symmetrical and of the same character, that is, either pneumatic or diploic.

Radiology has shown us that in the same person a fully pneumatized mastoid process can exist on the side of a healthy ear, whilst on the opposite side, which is the site of a chronic suppurative process, the mastoid process is densely sclerotic. Again, a skiagram of a chronic suppurative mastoiditis may show sclerosis surrounding the mastoid antrum with obliteration of the cells, whilst the periphery cells may frequently be seen still containing air. A follow-up skiagram of the same case some months or years later, when suppuration of the middle ear has been continuous, will show that these previously existing cells have become obliterated by this process of sclerosis, which has extended.

Therefore, in the face of the foregoing radiological facts, can we possibly accept Cheatle's statement in all cases? Certainly we can in the diploic type which has not been subject to infection. But in the type which undergoes sclerosis after pneumatization is it not this process of sclerosis gradually encroaching on the mastoid antrum which reduces it to a very small cell or chink, leading in time to obliteration? This state of obliteration is never seen, as apparently it would take a very long time. Before this stage is reached either arrest of the disease has taken place or an intracranial tragedy has occurred.

The second interesting point raised by Dr. Cantor is that of the surgical approach to the mastoid antrum via the middle ear. In setting out to perform the radical mastoid operation I have for many years isolated the bridge on both its anterior and posterior aspects, by so doing greatly simplifying the exposure of the aditus and antrum, making the reduction of the bridge much easier and consequently with much less risk of damaging the facial nerve. The posterior meatal wall is stripped from the mastoid bone after reflexion of the periosteum, the flap is cut and sewn back, and, finally, when the operation

is completed, any fashioning of the flap can be carried out. This procedure is essential when the lateral sinus is so far forward as to overlie the antrum, and has also the advantage of the flap dissection being carried out whilst the surgeon is fresh and not on completion of the operation, when the fingers are tired and clumsy after perhaps an hour's chiselling of eburnated bone.

Yours, etc.,

260, St. George's Terrace, Perth,
September 14, 1936.

A. W. Farmer.

THE UNDERGRADUATE AND HIS TRAINING IN THE NEUROSES.

Sir: Professor Bramwell has done me the honour of taking note of my rather critical remarks on his views on the teaching of the neuroses to medical students. The whole of Professor Bramwell's letter deserves the most careful attention, and I myself am in agreement with the greater part of it. But I must admit that on reading again his article in *The Practitioner* of December, 1935, and more especially the following:

> And what of the psychiatrist? Within recent years the psychiatrist has sallied forth from behind the walls of his institutions and staked out a claim in the treatment of the neuroses. It is of interest to trace the origin of these raids. A stigma has from the earliest times been attached by the public to mental disease, an unfortunate impression which the psychiatrist is rightly anxious to correct. With this object in view he no longer calls his institutions asylums, but mental hospitals or hospitals for nervous and mental diseases. He has also established out-patient clinics to which he would attract patients suffering from neuroses. Again, he points out that he has especially devoted himself to the study of the mind in health and disease, that a diagnosis between a psychosis and a neurosis in the early stages may be difficult, that the early treatment of the psychoses is of great importance in prevention, and that he is the expert here both in diagnosis and treatment. The psychiatrist was not slow to seize his opportunity when the neurologist began to use the word "mental" with which to designate the origin of the symptomatology of the neuroses. But while one has every sympathy with the psychiatrist in his ideal, he has no easy task before him if he is to establish his position as the authority on the neuroses to whom the training of the undergraduate should be entrusted. The stigma attached to mental disease is of such long standing that it will be with difficulty dispelled. Further, while the psychiatrist claims that he has applied himself particularly to the study of academic psychology and mental symptomatology, he does not come across the neuroses in their early stages and possibly never will have this opportunity.

I still feel that Professor Bramwell's strictures upon the psychiatrist as a fit person to teach the medical student about the neuroses are unduly severe. In fact, I would suggest that his remarks are more applicable to the institutionalized "alienist" or "mad-doctor" of a past generation than to the product of post-graduate training of the past twenty years. While it must be admitted that some out-patient departments for "mental diseases" or "psychological medicine", as they are styled, in England and no doubt in Scotland, have quite a considerable proportion of psychotics in the more or less early stages and congenital mental defectives amongst their clientele, there are far more which are attended mainly by neurotics and also to an increasing extent by children with emotional instability and various behaviour difficulties which are causing concern to their parents and teachers; and this is also my experience in Sydney.

I would be the last to deny that the neurologist may have a very sound understanding of the neuroses, and indeed I have noted with interest the number and variety of neurotics so adequately handled by the out-patient physicians at the National Hospital in London. Nevertheless I would not go so far as to admit that a neurologist is necessarily a better teacher of the neuroses than the psychiatrist, and when Professor Bramwell refers to "the neurologist who is at the same time teaching general medicine" I would suggest that a general physician "who is interested in the neuroses" is equally qualified to instruct the medical student in this aspect of mental disorders.

So, to quote from a celebrated classic: "With all possible respect for the Chair, I cannot withdraw the expressions I have made use of." At the same time, should Professor Bramwell consider that some of the remarks in my article in the journal of March 28, 1936, bear evidence of too much emotion, I would ask him to suppose that my "observations had been merely intended to bear a Pickwickian construction".

Yours, etc.,

135, Macquarie Street, Sydney,
September 18, 1936.

W. S. Dawson.

DISEASES OF THE CHEST.

Sir: I wish to call your attention to the misreporting of my remarks made at a meeting of the British Medical Association, Victorian Branch, on June 3, 1936. So efficiently is this arduous reporting service rendered to members that I am loath to request correction; but as the views printed are diametrically opposed to opinions I have expressed on this and other occasions, I feel constrained to point out the error.

The report of this meeting was published in The Medical Journal of Australia on September 5, 1936, and the passage referred to is: "It should be recognized too that there were extremes of evaluation in radiology; radiology was of little value in the examination of contacts of tuberculous patients and also when a decision was to be made concerning the superimposition of tuberculosis on pneumonokoniosis." The latter portion should read: "Radiology was of the greatest value in the examination of contacts of tuberculous patients *et cetera*." By contrast, I believe that the results of physical examination in such cases are misleading, as signs are vague or absent.

Also may I support the letter of Dr. David Rosenthal concerning the formation of a Section of Chest Diseases of the Victorian Branch of the British Medical Association? This should unite physicians and surgeons interested in diseases of the chest, and also laryngologists, paediatricians and radiologists, so that their varying points of view may be expressed, say two or three times a year, for their mutual benefit and better understanding. An enhanced service to sufferers from chest complaints, I am sure, would result.

Yours, etc.,

Saint George's Hospital, Cotham Road, Kew, E.4, Victoria.
September 21, 1936.

Keith H. Hallam.

Obituary.

JOHN MACQUARIE ALCORN.

We regret to announce the death of Dr. John Macquarie Alcorn, which occurred on September 25, 1936, at Moss Vale, New South Wales.

JOHN HARE PHIPPS.

We regret to announce the death of Dr. John Hare Phipps, which occurred on September 27, 1936, at Warrawee, New South Wales.

Books Received.

THE S.F.D. HANDBOOK OF DENTAL RADIOGRAPHY; 1936. Australia and New Zealand: W. Watson and Sons Limited. Demy 4to, pp. 37, with illustrations.

POCKET MONOGRAPHS ON PRACTICAL MEDICINE: AN EPITOME OF OBSTETRICAL DIAGNOSIS AND TREATMENT IN GENERAL PRACTICE, by B. Solomons, M.D., F.R.C.P.I., F.C.O.G., F.A.C.S.; Volumes I and II; 1936. London: John Bale, Sons and Danielsson, Limited. Foolscap 8vo, pp. 140. Price: 2s. 6d. net each volume.

A SHORT HISTORY OF TUBERCULOSIS, by G. N. Meachen, M.D., B.S., M.R.C.P.; 1936. London: John Bale, Sons and Danielsson, Limited. Crown 8vo, pp. 112, with illustrations. Price: 3s. 6d. net.

REPORTS ON CHRONIC RHEUMATIC DISEASES, BEING THE ANNUAL REPORT OF THE BRITISH COMMITTEE ON CHRONIC RHEUMATIC DISEASES APPOINTED BY THE ROYAL COLLEGE OF PHYSICIANS, edited by C. W. Buckley, M.D., F.R.C.P.; Number Two; 1936. London: H. K. Lewis and Company Limited. Royal 8vo, pp. 150. Price: 10s. 6d. net.

MATERNITY AND POST-OPERATIVE EXERCISES IN DIAGRAMS AND WORDS, by M. Morris, C.S.M.M.G., in collaboration with M. Randell, S.R.N., S.C.M., T.M.M.G.; 1936. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 168, with illustrations. Price: 7s. 6d. net.

RECENT ADVANCES IN GENITO-URINARY SURGERY, by H. Bailey, F.R.C.S., and N. M. Matheson, M.B., F.R.C.S., M.R.C.P.; 1936. London: J. and A. Churchill Limited. Demy 8vo, pp. 221, with illustrations. Price: 15s. net.

RESEARCH ON THE LOW POTENCIES OF HOMŒOPATHY (AN ACCOUNT OF SOME PHYSICAL PROPERTIES INDICATING ACTIVITY), by W. E. Boyd, M.A., M.D.; 1936. London: William Heinemann (Medical Books) Limited. Crown 8vo, pp. 38, with illustrations. Price: 2s. 6d. net.

Diary for the Month.

Oct. 6.—Tasmanian Branch, B.M.A.: Council.
Oct. 6.—New South Wales Branch, B.M.A.: Council.
Oct. 7.—Western Australian Branch, B.M.A.: Council.
Oct. 7.—Victorian Branch, B.M.A.: Branch.
Oct. 9.—Queensland Branch, B.M.A.: Council.
Oct. 12.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Oct. 13.—Tasmanian Branch, B.M.A.: Branch.
Oct. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Oct. 20.—Tasmanian Branch, B.M.A.: Council.
Oct. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
Oct. 21.—Western Australian Branch, B.M.A.: Branch.
Oct. 22.—New South Wales Branch, B.M.A.: Clinical Meeting.
Oct. 23.—Queensland Branch, B.M.A.: Council.
Oct. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Oct. 28.—Victorian Branch, B.M.A.: Council.
Oct. 29.—South Australian Branch, B.M.A.: Branch.
Oct. 29.—New South Wales Branch, B.M.A.: Branch.
Nov. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Nov. 3.—Tasmanian Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xxii-xxiv.

Balmain and District Hospital, Balmain, New South Wales: Honorary Physician.

Launceston Public Hospital, Launceston, Tasmania: Resident Medical Officer.

Perth Hospital, Perth, Western Australia: Resident Medical Officers.

Royal Melbourne Hospital, Melbourne, Victoria: Honorary Officers.

State Public Service, Queensland: Medical Officer.

Sydney Hospital, Sydney, New South Wales: Director of Pathology.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
South Australian: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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